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CONTENTS Page 1. INDEX TO ADVERTISEMENTS Page 2.

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Observations
ON
WAR SURGERY OF THE CHEST.

BY
CAPTAIN A. L. LOCKWOOD, M.C., R.A.M.C.,
AND
CAPTAIN J. A. NIXON, R.A.M.C.(T.F.).

PART I.

THE surgery of gunshot wounds of the chest has attracted considerable attention during the past few months, and there has been a general trend in the direction of more active surgical measures. Any discussion upon war surgery of the chest must nowadays include abdomino-thoracic as well as thoracic wounds. It is no longer possible to separate for treatment or discussion "pure chest wounds."

At the outset of our work we felt that one chief problem to be faced was the recognition of those cases which recover without operation as distinguished from those which, unless operated upon, are inevitably fatal. Speaking broadly, the cases upon which we now perform a complete intrathoracic operation, and for which we advise this operation, belong solely to the latter group.

We feel compelled to add that in our opinion the complete intrathoracic operation stands at present in some danger of being performed upon cases in which it is neither necessary nor justifiable. We do not advocate it for haemothorax *per se*. We are aware that our conclusions and our methods do not accord with those in vogue elsewhere or advocated in articles recently published, but we are convinced that the procedures which we shall describe, especially the early resuscitatory methods, the diagnostic measures, the exact localization of missiles, the operative technique, and the post-operative treatment, are essential and indispensable.

From our own experience, and from our intimate association with Duval, we believe that unless surgeons have kept their chest cases under their own observation until convalescence is complete it is impossible for them to form correct conclusions as to the value and ultimate results of their treatment.

During the whole of the Somme offensive from July, 1916, it was found possible to retain all serious chest cases in the unit even until thoroughly convalescent. This was due to the fact that Sir Wilmot Herringham undertook the care of these cases at a time when the regular officers of the unit were fully employed in dealing with what were then considered more urgent cases. By degrees the importance of not evacuating severe chest cases was appreciated. Since August, 1917,* all chest cases, whether serious *or slight*, have been retained in the casualty clearing station until they were up and about and able to do light duty. Apparently the opportunities for holding cases for such a long time have not existed in any other British front unit.

In forming conclusions as to treatment and mortality figures it must be borne in mind that chest wounds, in common with all other wounds, show wide variations in their course, dependent upon the soil of the battle ground, the nature of the weapons used (rifle, shell, or bomb, etc.), the use of gas, the weather conditions, and the facilities for rapid evacuation.

Up to the middle of 1916 we had treated wounds of the chest for the most part expectantly. We had not even considered it necessary to excise the parietal wound unless badly infected, although excision of all other wounds was regarded as of paramount importance.

While the treatment of wounds involving the chest alone consisted in the early stages in absolute rest and non-interference, and later operations were dictated by infection of the thoracic cavity, nevertheless, injuries extending to the abdomen and involving the diaphragm were recognized by us as demanding immediate operation, and not being "necessarily fatal."

As early as the middle of July, 1916, it was realized that practically all wounds of the diaphragm left unrepaired proved fatal. From that period all cases diagnosed or suspected of having a diaphragmatic lesion were operated upon. Repair of the diaphragm was found to be of greater urgency than the repair of any hollow or solid viscus in the abdomen.

But repair of the diaphragm was not always sufficient. In some cases there existed a serious lesion of the thorax or its contents. At first we did not appreciate that in such cases the operation should extend further, and that for complete success repair of the intrathoracic lesion must be included.

The stages by which we gradually evolved our treatment of thoracic and abdomino-thoracic injuries were briefly as follows:

1. The parietal wound was excised, the comminuted fragments of rib removed, and the pleura, if possible, closed. No attempt was made to clear out the haemothorax, or to follow the missile into the chest. Repair of the thoracic contents was not embarked upon.

2. In July, 1916, repair of the diaphragm became a routine procedure by the abdominal route.

3. Extensive injuries to the bony skeleton of the thorax were seen to be almost invariably fatal. The principal cause of death was not sepsis. The patients did not recover from the shock and exhaustion of gross bony lesions until we began to remove all comminuted bone and sharp spicules. From this time it became an established rule to operate on the parietes on all "stove-in" chests.

4. An important advance was made when a case was recognized in which the diaphragm was injured by a purely thoracic wound. A successful operation was performed by the thoracic route instead of, as previously, by the abdominal. Thenceforward we adopted the practice of dealing with thoracic injuries of the diaphragm through the thoracic wound.

5. Up to the end of 1916 open (sucking) wounds of the chest—traumatopnoea—had shown a mortality of almost 100 per cent. Various methods of plugging the hole in the chest wall were found to postpone, but not to avert, the fatal result. At this time we realized that it was practicable to excise the parietal wound, clear out completely the haemothorax, and close the opening in the chest wall.

EVACUATION AND EARLY HANDLING.

At the advanced dressing station, apart from cases which die before they can be moved, certain cases are received which are not fit to travel until they have rallied to some extent. Into this category come cases of traumatopnoea. This type of wound requires to be carefully cleaned without an anaesthetic and the skin sutured with silkworm gut through a plug of gauze so that there is no leakage of air. The improvement in the patient's condition is often marvellous within an hour or two of being sutured. The mental distress which accompanies traumatopnoea is at once relieved. The lung often expands and the respirations become deeper, easier, and more regular. Cases should travel direct from the advanced dressing station to the surgical unit dealing with chest wounds.

We believe that chest cases requiring early operative treatment require it as urgently and as promptly as abdominal cases.

RESUSCITATION.

Immediately on admission to the casualty clearing station these cases are dressed in clean pyjamas, laid between warmed blankets in a heater in the position most comfortable to the individual case, but, if possible, with the injured side dependent. Continuous rectal administration of sod. bicarb. and glucose (5 per cent. each in water) is started. Intravenous sod. bicarb. (2 per cent.) is given if required, and in a large percentage of severe cases immediate blood transfusion (600 to 800 c.cm.) is administered with the minimum of disturbance to the patient, preferably by the new "No. 17" or the Kimpton Browne tube.

Hot drinks by the mouth, especially cocoa, are given freely, but no stimulants whatever. As Crile has insisted, sleep is the great restorative, and should be procured by every means and device, such as a plug of cotton wool in the ears, subdued lights, perfectly quiet surroundings, and omnopon or morphine, the former for choice. Urgent dyspnoea from haemothorax or pneumothorax should be relieved before operation by aspirating. If fresh haemorrhage is suspected, the aspiration should be partial and combined with oxygen replacement.

DIAGNOSIS.

As soon as his condition permits, the patient should be thoroughly examined by the surgeon and the physician

*Throughout this paper the term A Group refers to cases prior to August, 1917, and the term Z Group refers to cases after August, 1917.

together with the *x* rays, at the patient's bedside, in order to decide whether immediate operation is required.

Surgical Measures.

The surgical measures which these cases appear to justify should not be attempted unless:

(*a*) Active resuscitation can be carried out immediately after admission.

(*b*) The services of an expert radiographer are at all times available.

(*c*) The physical signs can be carefully studied and judiciously interpreted.

(*d*) The most perfect asepsis can be secured at the operation.

Given these conditions, we are guided by the following general rules for operation:

1. Operate as soon as the patient's condition allows. (This is much earlier with local than with general anaesthesia.)
2. Operate at a place where early evacuation will not be necessary.
3. Operate in all cases where *injury of the diaphragm is suspected.*
4. Operate on all cases with open pneumothorax (traumatopnoea).
5. Operate on all badly "stove-in" chests, where the pleura is lacerated, even though there is no external wound.
6. Operate on all cases where a large missile has traversed the pleural cavity, whether lodged in
   (*a*) The chest wall,
   (*b*) The pleural cavity,
   (*c*) The lung,
   (*d*) The mediastinum, or
   (*e*) The pericardium.
7. Operate on all very acutely infected cases, even although the missile is not retained.

Accurate localization of the missile and correct interpretation of the *x*-ray plates are essential and of the greatest value in diagnosis. Movements of the thoracic contents and the diaphragm, as well as the position and degree of movement of the missile, can only be determined with the screen.

Full-size stereoscopic plates showing both sides of the chest and the diaphragm should be taken.

The *x* rays show the approximate amount of haemothorax, the presence of pneumothorax, haematoma of the lung substance, the degree of collapse of the lungs, the position of the diaphragm, and the position of the heart and mediastinum and the comminution of the ribs. Repeated *x*-ray examination of the chest is essential during the progress of the case. A sectional atlas of the Symington type is found of the greatest assistance in determining the relative position of the missile and the structures probably traversed. An aluminium-topped combined operating and *x*-ray table of the type of the Bonnette Eclipse du Dr. Dessane is of the greatest service.

Clinical Symptoms and Signs.

The physical examination of the patient should always be limited in the first instance to ascertaining whether an immediate operation is advisable or possible.

If the patient has any of the conditions enumerated above as indications for operation, and he can stand one hour's surgical interference, a meticulous examination of all the physical signs which the chest may present is unnecessary, and will not influence the decision to operate. But it should be borne in mind that if the missile has traversed the mediastinum and penetrated both sides of the chest early operative treatment should never be undertaken.

The presence of considerable surgical emphysema obliterates or distorts every other physical sign except the position of the heart. When considerable surgical emphysema has developed in the chest wall there is, as a rule, pneumothorax underlying it. Marked displacement of the heart may indicate that the heart has been pushed out of position by fluid or air. In disturbances of the respiratory mechanism due to injuries of the diaphragm, displacement of the heart to the injured side has been found. The signs described as those of "contralateral collapse" have been recognized by us in very few cases.

Early operation on cases showing the signs and symptoms of bronchopneumonia on the uninjured side must not be lightly undertaken, but if undertaken local anaesthesia alone must be used.

Physical signs suggesting involvement of the pericardium or heart do not constitute a contraindication to operation; they are, moreover, most fallacious.

The churning sound usually associated with haemopneumopericardium has been met with where this condition did not exist. A tumultuous and irregular heart-beat has been seen when the pericardium had not been even penetrated. This phenomenon undoubtedly results when the heart has been hit by a large missile which has rebounded, and—with the *x* rays—is seen to be lying at some distance from the heart. Autopsy has revealed two such cases, with severe bruising of the heart. The regularity of the heart-beat is disturbed when the position of a missile is such that, with each beat, the posterior aspect of the heart touches the missile. A cardiac impulse visible with the *x* rays is frequently seen in a missile lying some little distance outside the pericardium and not in actual contact with the heart.

Respiratory distress does not always accompany even the largest effusions. The degree of movement in a chest is not always proportionate to the intrathoracic injury. Immobility may be very complete without intrathoracic lesion. There is a condition met with when the chest has been hit without production of haemothorax or pneumothorax in which the injured side remains retracted, resonant, and silent, but with normal vocal fremitus and normal *x*-ray appearances. This condition persists for one or two days and recovers completely.

Tactile vocal fremitus is not always diminished, and is occasionally increased over haemothorax. The level of dullness does not indicate the size of a haemothorax. Bronchial breathing is not uncommon over a haemothorax. Haemothorax occurs although the pleura has not been penetrated.

Amphoric breathing is frequently heard over pneumothorax. The coin sound is sometimes absent even in large pneumothorax. The heart has been found in normal position in total pneumothorax of the left side. Physical signs alone will not distinguish gas from air. Pneumothorax does not always develop rapidly after the injury; it is sometimes a late and gradual occurrence.

Signs of increasing effusion after twenty-four to thirty-six hours are scarcely ever due to active haemorrhage, and recurrent haemorrhage has been seen by us only in five cases.

It has been a puzzle to us why haemothorax so constantly develops in chest injuries. Seldom have we found the intercostal artery to be ruptured, or, at any rate, still bleeding; rarely, if ever, have we seen anything but the slightest oozing from lacerated lung except when it is held up by adhesions. At operation, even in lungs only partially collapsed, excision of the track or bed of the missile is accompanied by remarkably little haemorrhage.

[The portion of the paper dealing with operation and post-operative treatment is postponed for lack of space in this issue, and will appear as Part II next week. The remainder of Part I consists of statistical tables and case summaries.]

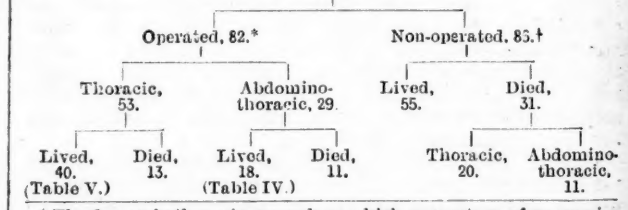
STATISTICAL TABLES AND CASE SUMMARIES.

I.—*Analysis of Admissions.*

Z Group.

(August to November, 1917.)

Total cases, 168.



* The figures in thoracic cases show a high percentage of recoveries in cases that previously showed a mortality of nearly 100 per cent.

† A high proportion of non-operated cases were brought in dead (9), or died within a few hours of admission (21). In the cases that lived longer than a day or two the serious nature of their injuries will be seen in the analysis of fatal cases (Table VI).

II.—*Comparative Number of Abdomino-thoracic Operations Performed before and after August, 1917.*

A GROUP.*

(*Before August, 1917.*)

Total chest cases admitted	1,254
Abdomino-thoracic operations (Table III)	60
Lived	32
Died	28

Z GROUP.

(*After August, 1917.*)

Total chest cases admitted	168
Abdomino-thoracic operations	29
Lived (Table IV)	18
Died (Table VI)	11

*A Group: No percentage mortality is given in this group, which consists of 1,254 admissions. This is partly due to the difficulty of tracing cases which were evacuated early. The figures for one month illustrate the small value of comparing records of percentage mortality from chest wounds. In September, 1915, 203 cases were admitted to a special chest ward; of these only 16 died. The explanation of this low death-rate—in a group which might be represented as the total of chest wounds admitted—lies in the fact that abdomino-thoracic injuries were taken into surgical wards and classified separately.

III.—*Analysis of Abdomino-thoracic Operations.*

A. GROUP.

	Died.	Alive.
Chest and diaphragm only	2	11
Chest and diaphragm		
+ Liver	4	10
+ Kidney	2	0
+ Spleen	5*	1
+ Small intestine	1	0
+ Liver and kidney	1	1
+ Liver and colon	0	2
+ Liver and spleen	0	1
+ Liver and stomach	2	0
+ Liver and small intestine	1	1
+ Spleen and kidney	2	1
+ Kidney and stomach	0	1
+ Spleen and stomach	3	1
+ Spleen and small intestine	1	1
+ Liver, spleen, and small intestine ...	1	0
+ Liver, kidney, and small intestine ...	1	0
+ Spleen and spine	1	0
+ Colon (general peritonitis)	1	0
Double diaphragm + liver (right) and kidney (left)	0	1
	28	32

* Two splenectomies.

V.—*Analysis of Thoracic Cases Operated on (Recoveries only).**

Z GROUP.

Cases 1 to 10.—Each of these patients was admitted with a large parietal wound of the chest with haemothorax. In all cases the wound was excised, without opening the chest. After-treatment consisted of aspiration. There were no complications. Case 3 was evacuated on the third day, and Case 6 on the fifth; the other cases were out of bed on the 20th, 12th, 13th, 20th, 18th, 8th, 11th, and 11th days respectively.

Case 11.—Large parietal wound of chest with haemothorax; multiple wounds. At operation the chest and other wounds were excised (chest not opened), and the right arm was amputated. Subsequently the patient developed bronchopneumonia (right and left). He was evacuated on the seventeenth day.

Case 12.—Large parietal wound; two ribs comminuted; haemothorax. Wound excised; ribs trimmed; chest not opened. Aspirated. Patient got up on the twentieth day.

Case 13.—Large parietal wound; two ribs comminuted; haemothorax; multiple wounds. Chest and other wounds excised; ribs trimmed; chest not opened. Aspirated; later bronchopneumonia developed. Patient got up on the twenty-eighth day.

Case 14.—Large parietal wound; one rib comminuted for four inches. Chest wound excised; rib trimmed; chest not opened. Later the chest was aspirated, and the patient was out of bed on the twentieth day.

Case 15.—Large parietal wound admitting two fingers; two ribs comminuted. Chest wound excised; ribs trimmed; chest not opened. Aspirated. Patient got up on the twentieth day.

Cases 16 and 17.—Large parietal wound; traumatopnoea; gutter wound; missile not traversing pleural cavity; no gross comminution of ribs. Parietal wound excised; opening in chest closed without exploration. Subsequently both cases were aspirated. Case 16 was up on the twentieth day. Case 17 developed gas gangrene of the chest wall, but was out of bed on the fifty-fifth day.

Case 18.—Traumatopnoea. Complete operation. Later, chest aspirated. Got up on the thirty-fifth day.

Case 19.—Traumatopnoea. Complete operation, except left open at end of operation. Extensive gas gangrene of chest wall and lung at time of operation. Evacuated on the eighty-sixth day.

Cases 20 to 24.—Traumatopnoea with laceration of lung. Complete operation. Aspirated. Case 20 was up on the

(Continued on p. 109.)

* Haemothorax or haemopneumothorax was present in every case. Fatal cases (49 in number) are shown in the general table of deaths in Z Group (Table VI).

IV.—*Analysis of Abdomino-thoracic Operations (Recoveries only).*

Z GROUP.

No. of Case.	Chest.	Lung.	Diaphragm.	Liver.	Spleen.	Kidney.	Empyema.	Other Lesions.	Operation.	Day of Getting up or of Evacuation.
1	Penetrated		★	★				Missile free in abdomen. Blood in peritoneal cavity. No hollow viscus injured	Chest and abdomen	30th.
2	Penetrated		★		★			Multiple wounds	Chest	12th.*
3	Penetrated		★		★			Multiple wounds	Chest	41st.
4	Penetrated		★	★					Chest	45th.
5										28th.
6										17th.
7										26th.
8										24th.
9	Penetrated		★	★			Yes		Chest	40th.
10	Penetrated		★	+++			Yes		Chest	56th.
11	Penetrated	★	★	★					Chest and abdomen	85th.
12	Penetrated		+						Chest	35th.
13	Penetrated		★			★			Chest and repair of kidney	40th.
14	Penetrated		++			★			Ditto	28th.
15	Traumatopnoea ++	★	Right and left						Chest	50th.
16	Traumatopnoea +++		5-inch laceration	+++		★		Large intestine herniated	Chest and nephrectomy	55th.*
17	Traumatopnoea +	★	★	★			Yes		Chest	50th.
18	Penetrated	★	★	★			Yes	Empyema (streptococcus) developed late after operation; cellulitis of chest wall; wound not reopened	Chest	14th.*

* These cases were evacuated, Case 2 as a lying case, and Case 18 with an empyema not drained.

The mark ★ indicates that the organ was wounded. Each + mark indicates a laceration admitting one finger. Fatal cases (11 in number) are shown in the general table of deaths in Z Group (VI).

VI.—*Analysis of all Fatal Cases in Z Group.*

No. of Case.	Chest.	Lung.	Diaphragm.	Mediastinum.	Liver.	Spleen.	Spine.	Other Lesions.	Operation.	Day of Death.
1	Penetrated				++			Carotid sheath and contents lacerated		Brought in dead.
2	Traumatopnœa	+						Pulmonary vein lacerated		Brought in dead.
3	Penetrated							Multiple wounds		Brought in dead.
4	Traumatopnœa	++		★				Descending aorta punctured	Yes	Under 12 hrs.
5	Penetrated	★						Bronchopneumonia, double		,, ,,
6	Penetrated both chests	++		★				Œsophagus and superior vena cava traversed		,, ,,
7	Penetrated	★		★				Superior vena cava traversed		,, ,,
8	Penetrated			++				Pulmonary vein opened		,, ,,
9	Penetrated right and left	★		★				Double haemothorax; multiple wounds		,, ,,
10	Penetrated		★			★		Abdomen traversed; bronchopneumonia	Yes	,, ,,
11	Penetrated	★						Multiple wounds		,, ,,
12	Penetrated						★	Pulmonary vein opened; multiple wounds		,, ,,
13	Traumatopnœa	★	++++		++					,, ,,
14	Traumatopnœa +++	+	++		+					,, ,,
15	Traumatopnœa ++ through-and-through		Right and left ++			++		Stomach; two perforations		,, ,,
16	Traumatopnœa		+++		★	++		Kidney lacerated; multiple wounds		,, ,,
17	Penetrated	★	★		★			Kidney lacerated		,, ,,
18	Penetrated right and left						★	Kidney lacerated; multiple wounds		,, ,,
19	Parietal wound, penetrated							Pulmonary vein opened; gas gangrene		,, ,,
20	Traumatopnœa through-and-through							Multiple wounds		,, ,,
21	Parietal wound, penetrated					★		Stomach, small intestine, and kidney perforated	Yes	Under 24 hrs.
22	Penetrated						★			,, ,,
23	Traumatopnœa ++	++							Yes	,, ,,
24	Penetrated		++			★		Hernia of omentum through diaphragm; kidney lacerated	Yes	,, ,,
25	Penetrated	★	++		+++			Portal vein traversed; gas gangrene	Yes	Under 24 hrs.
26	Large parietal wound +++, penetrated	★					++	Gas gangrene	Yes	,, ,,
27	Wound of neck only	★					+++	Haemotoma, apex of left lung; haemothorax, left	Yes	,, ,,
28	Wound of neck only	★					++	Haematoma, apex of left lung: laceration of brachial plexus and vessels	Yes	,, ,,
29	Penetrated	★	Two wounds			★		Multiple wounds; gas gangrene	Yes	2nd day.
30	Penetrated	★			+++			Heart injured	Yes	,,
31	Penetrated	++	++		+++				Yes	,,
32	Penetrated	+++	★		++			Gas gangrene	Yes	,,
33	Penetrated		+++ ++		++				Yes	,, Died on table.
34	Traumatopnœa +++	Two wounds						Bronchopneumonia, double	Yes	2nd day.
35	Penetrated	★	★		★			Bronchopneumonia	Yes	3rd day.
36	Penetrated	+++						Bronchopneumonia	Yes	,,
37	Penetrated		Two wounds		★			Bronchopneumonia, double	Yes	,,
38	Penetrated	++						Bronchopneumonia, double	Yes	4th day.
39	Traumatopnœa +++		★		★			Four ribs comminuted; peritonitis	Yes	,,
40	Penetrated		+++					Hernia of omentum	Yes	5th day.
41	Penetrated	★		★				Sternum and left clavicle fractured; internal mammary artery lacerated		7th day.
42	Large parietal wound							Bronchopneumonia, double		8th day.
43	Traumatopnœa	★						Bronchopneumonia, double; gas gangrene	Yes	10th day.
44	Penetrated						Two wounds	Multiple wounds; injury thoracic duct suspected, not proved *post mortem*		15th day.
45	Penetrated right and left			★				Fractured sternum; pulmonary vein traversed; secondary haemorrhage		16th day.
46	Penetrated	★		★				Thoracic duct injured and stenosed; bronchopneumonia, double		18th day.
47	Traumatopnœa	★			★			Gas gangrene; multiple abscesses of liver	Yes	22nd day.
48	Penetrated	★						Bronchopneumonia, double; empyema		26th day.
49	Traumatopnœa +++		++					Four ribs comminuted; bronchopneumonia		34th day.

V.—*Analysis of Thoracic Cases Operated on (Recoveries only).—(Continued.)*

twentieth day; Case 21 on the nineteenth; Case 22 on the fifteenth; Case 23 on the thirtieth; and Case 24 on the twenty-first.

Case 25.—Traumatopnoea with hole in lung admitting two fingers. Complete operation. Aspirated. Got up on the thirty-fifth day.

Case 26.—Traumatopnoea with hole in lung admitting two fingers. Complete operation. Aspirated, but leaked pus (staphylococcus) from localized empyema. Was out of bed on the sixty-fourth day.

Case 27.—Traumatopnoea with missile lodged in mediastinum. Complete operation; missile removed from mediastinum. Aspirated. Got up on the fiftieth day.

Case 28.—Traumatopnoea (hole into chest admitting two fingers) and laceration of lung. Complete operation. Aspirated; leaked pus (staphylococcus) from localized empyema; closed completely and spontaneously. Patient was out of bed on the ninety-sixth day.

Case 29.—Traumatopnoea (admitting three fingers); laceration of lung, pericardium perforated. Complete operation; small missile not removed. Aspirated. Got up on the twentieth day.

Case 30.—Penetration of chest and mediastinum; laceration of lung. Complete operation; missile removed from mediastinum. Aspirated; leaked pus (staphylococcus) from mediastinum; closed completely and spontaneously. Got up on the twenty-eighth day.

Case 31.—Penetration of chest; laceration of lung; multiple wounds. Complete operation; multiple wounds excised. Aspirated. Got up on the forty-first day.

Case 32.—Penetration of chest; multiple wounds. Complete operation; multiple wounds excised; amputation of left arm. Aspirated. Evacuated on the thirty-fifth day.

Cases 33 to 36.—Penetration of chest; laceration of lung. Complete operation; missile removed, except in Case 36. Aspirated. Case 33 got up on the fortieth day; Case 34 on the forty-fifth; and Case 35 on the sixty-fifth. Case 35 was evacuated on the twenty-first day.

Case 37.—Penetration of chest (through-and-through); laceration of lung. Complete operation on the ninth day, because of *B. perfringens* infection. Infected haemothorax (*B. perfringens* and streptococcus); operation late. Developed empyema after operation; aspirated four times (cultures unchanged). Recovery without drainage. Was out of bed on the fortieth day.

Case 38.—Penetration of right and left chest; mediastinum traversed; missile lodged in heart; right haemothorax. Aspiration of right chest only at first. Later, complete operation on left side; missile not removed. Patient got up on the sixty-fifth day.

Case 39.—Penetration of right and left chest; one large parietal wound; double haemothorax. Complete operation on side of parietal wound. Aspirated. Got up on the forty-fifth day.

Case 40.—Crushed chest, no external wound; four ribs fractured on the left side, and two on the right; left haemothorax. Complete operation, left side. Aspirated; empyema developed. Patient was out of bed on the seventieth day.

Note.—In the Z group the proportion of bomb and shell wounds was unusually high; only two cases were wounded by rifle bullets and two by shrapnel ball. The severity of the group, considered as a whole, was exceptional.

As regards the operations performed, none were left open at operation, except one with extensive gas gangrene of the entire left lung and chest wall. The case was considered absolutely hopeless, but made a good recovery, and has been evacuated with a large opening (2½ in. in diameter) in the chest wall not yet healed.

No case was reopened, but five leaked pus from their incisions—as a rule, at the most dependent part. We believe this was due to localized collection of pus in the pleural cavity adjacent to the incisions, because the lungs as a whole were well expanded.

Spontaneous closure of the sinuses took place without interference with the wound or sinus, except in one case still discharging a little pus at the time of evacuation, and one case—with gas gangrene of chest wall and lung—which reopened completely and died twenty days after operation.

The improvement in results of the abdomino-thoracic operations we believe to be due to the more complete thoracic operation which is being done as part of the combined operation.

All cases in the Z group were anaesthetized with novocain and gas and oxygen (if required), except two (multiple wounds), who had hot ether.

In every fatal case complete autopsy was performed, except five in which the lesions of the chest and the accompanying multiple wounds were so gross that there remained little more to expose.

VII.—*Empyema occurring in Non-operated Cases.*
(Five Cases.)

Case 1.—Penetration of chest, through-and-through (rifle bullet). Patient moribund on admission. Haemopneumothorax aspirated repeatedly; condition scarcely improved. Later empyema developed (streptococcus and staphylococcus). Treated by repeated aspirations. Condition remained very grave. Resection and drainage on the thirty-ninth day. Evacuated (not convalescent) on the forty-seventh day. He reached England and had got out of bed, January 9th, 1918.

Case 2.—Penetration of chest, right and left; fractured ribs both sides, comminuted on right; probable injury of liver (developed jaundice); right haemothorax. Moribund on admission. Developed double bronchopneumonia. The case appeared hopeless and operation impossible, but recovered with late development of empyema (right); cultures sterile! Resection and drainage on twentieth day. Evacuated on the twenty-seventh day, convalescent but still draining.

Case 3.—Small parietal wound of chest; multiple wounds; chest not penetrated. Developed pneumonia with empyema (pneumococcus) on side of parietal wound. Aspirated, and eventually drained without resection of rib. Closed rapidly after drainage. Evacuated, convalescent, on the forty-third day.

Case 4.—Penetration of chest; left haemothorax with active haemorrhage on aspiration. Aspiration repeated with oxygen replacement. Moribund on admission. Developed empyema (staphylococcus); repeated aspirations (280 oz. withdrawn in all). Developed acute parenchymatous nephritis. Empyema cleared without resection; nephritis improved greatly; trace of albumin remained. Evacuated, convalescent, on the eighty-third day.

Case 5.—Penetration of chest, through-and-through; small haemothorax, right. Haemothorax aspirated. Developed double bronchopneumonia and empyema on side of haemothorax. Aspirated; not resected. Died on the twenty-sixth day.

THE TREATMENT OF SEPTIC HAEMOTHORAX AND EMPYEMA.

BY CAPTAIN J. CAMPBELL, R.A.M.C.(S.R.).

QUITE a number of cases of septic haemothorax in the early stage can be successfully treated by resection of a portion of rib and careful removal of all fluid and clot, followed by washing out and complete closure of the pleural cavity. On the other hand, a severely septic haemothorax does not yield to such treatment, and frequently leads to death of the patient (50 per cent. of cases) either from septicaemia or general toxic absorption. Short of this unfortunate result, drainage as usually carried out by the insertion of a large tube in the pleural cavity is followed by long severe pyrexia and exhausting suppuration.

The excellent results obtained elsewhere by the Carrel-Dakin method suggested that considerable advantage might be obtained from its use in some modified form in these cases also. Accordingly, I made several attempts to use it in different ways, but found that the most convenient and beneficial method is as follows:

The patient is *x* rayed, and any foreign body carefully localized. Under a general anaesthetic the wound is explored, the fractured portions of rib resected, and the wound sewn up if its condition allows.

The pleural cavity is then drained in the usual fashion, resecting about three and a half inches of rib as far forwards and as low as possible—that is, usually the eighth rib in the mid or anterior axillary line. Through this opening the cavity is explored, and an easily accessible foreign body and fragments of loose bone lying in the cavity or on the surface of the lung removed. Blood clot and fibrin are swabbed out as far as possible, and any septa forming loculi broken down. The cavity is next washed out with a warm mixture of hydrogen peroxide and eusol, or Dakin's solution. A rubber tube of a quarter of an inch internal diameter, with a large lateral opening a quarter of an inch from one extremity is then inserted, so that this end lies in the most dependent part of the pleural cavity when the patient is lying on the *normal* side—that is, in the costo-vertebral recess behind the pericardium. Finally, the wound is loosely sewn up, but no attempt is made to effect an airtight closure round the tube.

When the patient has recovered from the operation, the size of the cavity is estimated by filling it carefully (but usually incompletely) with warmed Dakin's solution, and then emptying it. After this the cavity is filled through the

tube every four hours to about one-third of its capacity or less with Dakin's solution. At the end of two hours another long tube is attached to the tube in the chest and the fluid siphoned out, the patient meanwhile lying on the sound side with the chest opening uppermost, or as nearly so as possible. The patient is told to pant or cough slightly at frequent intervals as long as the fluid remains in the chest, and by this means splash the fluid about inside the cavity, and so bathe with it the entire infected surface and any recesses that may exist.

In this way the pleural cavity contains for two hours a large quantity of sodium hypochlorite solution and is more or less empty for a like time. During the former period the patient lies rigidly on the sound side, without any raising of the shoulders, to prevent escape of the fluid and consequent flooding of the bed; during the latter he is free to lie as he chooses. Thus the patient gets a reasonable amount of rest and comfort and is saved the exhaustion associated with the maintenance of one constant position. In addition, once daily, the tube is removed, sterilized, and replaced, and the cavity washed out as in the usual treatment for empyema. To overcome the disadvantage of injecting cold fluid into the chest, I have found that it is better to make the Dakin's solution of double strength and, prior to filling, to dilute it with an equal quantity of warm sterile water.

If the original wound and site of fracture lie sufficiently far forwards, advantage is taken of this site for the insertion of the tube.

Sometimes difficulty is met with in siphoning out the fluid; this may be due either to the tube that is connected to the tube in the chest not being first filled with liquid or else to air being unable to enter the pleural cavity; in the latter case, it is well to slip an open-ended Carrel tube into the chest alongside the first. When this is done I use the smaller tube for filling up the pleura, as then the liquid cannot be injected too quickly.

When treatment is carried out in this way, it is found that pus formation and offensive odour largely disappear at the end of thirty-six hours and are absent at the end of three to four days; the patient's tongue becomes clean and moist almost at once; delirium and emaciation, so frequently seen in these cases, are absent, and the temperature and pulse rates fall much more rapidly than usual; indeed when looking at them, it is hard distinguish these cases from those that are not infected.

If pus continues to form under this method of treatment, it appears to be due to one or more of the following causes:

1. The Dakin's solution is not of proper strength or is used in insufficient quantity.
2. The cavity is not regularly filled and emptied.
3. A loculated cavity exists which the fluid does not reach.
4. A foreign body or loose bone fragments still remain in the pleural cavity.
5. Sloughing or abscess formation is taking place in the lung substance.

After using this method of treatment on a number of cases I have found that it is superior to other methods of treatment that I have tried. The benefit derived from it can easily be demonstrated by the rapid diminution of the number of organisms per field of the microscope in films made from the surface of the pleura. By this method, too, it is comparatively easy to raise the pleural cavity to "suture standard" and sew up the wound at an early date, with the result that lung expansion becomes more perfect and pleural thickening is largely avoided. I think another great advantage is that cross infection of the empyema cavity from without is avoided.

IT is only recently that vitiligo, or leucodermia, has been associated with syphilis. E. M. Auer (*Amer. Journ. Med. Sci.*, Phila., 1917, vol. cliv, pp. 592–596) gives about a dozen references from literature to this subject, and quotes Zelenev's analysis of 52 cases of leucodermia with the conclusion that, etiologically, they fall into two groups—tuberculous and syphilitic. Auer also reports four cases of leucodermia in patients with late syphilitic lesions of the central nervous system, and draws attention to the early appearance of leucodermia as compared with the other symptoms; he points out also that the symmetrical and segmental distribution of the areas of leucodermia suggests a lesion of the central rather than of the peripheral nervous system.

THE ENDOTOXIN OF THE MENINGOCOCCUS

A METHOD OF EXTRACTING IT FOR THE PURPOSE OF STANDARDIZING ANTIMENINGOCOCCUS SERUM.

BY

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FEW who have studied acute cases of cerebro-spinal fever during an outbreak can fail to be impressed by the potency of the toxin of the meningococcus, and if the observer is a bacteriologist he may be struck also by the relative infrequency with which this micro-organism is to be cultivated from the blood of the patients. Although the meninges are one of the chief sites of infection, a further feature of the disease that calls for notice is the relatively large number of pus cells that it may be necessary to search in film preparations of the cerebro-spinal fluid before one is found that contains meningococci. While there are occasional and striking instances in which the meningococcus is detected in large numbers in the cerebro-spinal system, or in the blood, in many cases of cerebro-spinal fever actual proliferation of the meningococcus in the tissues of the patient appears to be limited. Nor is this relatively restricted proliferation apparent only in cases that recover; even in fatal cases bacteriological investigation after death may reveal that the degree of meningeal suppuration is out of all proportion to the number of cocci present either in films or cultures of the meningeal exudate. There is little doubt that this limited proliferation of the meningococcus is often apparent rather than real, owing to the autolytic tendency of the coccus as well as to the lytic action of the secreted body fluids, both of which tend to liberate its endotoxin. In this relation it is of interest to recall that during the classical researches in course of which he reproduced the essential lesions and symptoms of cerebro-spinal fever in monkeys, and studied the fate of this micro-organism when introduced into the peritoneal cavity of guinea-pigs, or into the spinal canal of monkeys, Flexner observed this same point, and remarked that multiplication on the part of the cocci is not at all essential to the production of the peculiar symptoms and lesions: the meningococcus causing death by a poison liberated from the bacterial bodies.

For the purpose of comparing the pathogenic value of the meningococcus when alive, and when all chance of proliferation is eliminated, a series of experiments has been undertaken, and is still in progress, at the Central Cerebro-spinal Fever Laboratory. In the first place, three specimens of meningococcus were selected of definite pathogenicity to the mouse when introduced alive into the peritoneal cavity of that animal; and the effect on their individual pathogenicity was determined by killing the coccus by ether and then evaporating the warm broth suspension containing it to dryness *in vacuo* at 37° C. A series of falling doses of the suspension of living cocci was injected intraperitoneally into mice, and then duplicates of these doses were etherized, dried *in vacuo*, and next day (or later) redissolved by grinding up in distilled water, and, cultures having been taken to prove that the meningococcus was dead, injected intraperitoneally into mice. Proceeding in this way, it was found that, in the case of two of the meningococci, the coccus was fatal to the mouse in a smaller dose when alive than when killed in the manner described. In the case of the third meningococcus, however—which was a specimen of Type II recently isolated from a rapidly fatal case of cerebro-spinal fever—the coccus was fatal to mice in the same dose when killed, dried, and dissolved in the manner described, as when alive. While it would appear, therefore, that in the case of this particular meningococcus the endotoxin was either exceptionally potent, or more easily extracted than usual, the observation nevertheless furnishes a striking illustration of the great pathogenic importance of the endotoxin of this micro-organism.

It is generally agreed that exotoxin is not formed by the meningococcus in culture. On several occasions virulent specimens of the meningococcus have been cultivated at the Central Laboratory, in flasks of broth enriched by horse serum or by diluted rabbit's blood, and after incubation at 37° C. for a time, varying from a fortnight to a month, a portion of the broth was removed, the cocci contained by

it thrown down by centrifuge, and the clear supernatant fluid injected intraperitoneally into mice. In all cases the mice remained unaffected, so that no evidence has been obtained of the presence of soluble toxin in such cultures.

Up to the present two methods have been employed to obtain a solution of the endotoxin of the meningococcus. The first of these, which is the method favoured by Flexner and Dopter, makes use of the autolysin of the meningococcus for the purpose of disintegrating the coccus, and setting free its endotoxin. All that is necessary is to make a suspension in saline of a young culture of the meningococcus, then to add some disinfectant such as toluol, and to leave the suspension at 37° C. The cocci undergo autolysis, and a proportion of their endotoxin passes into solution. The second method has been used by Kolle and Wassermann, Kraus, and others. Young cultures of the meningococcus are suspended in distilled water, or in decinormal soda solution, and submitted to agitation for several days in a shaking machine. The suspension is then centrifuged, and the clear supernatant fluid is found to contain endotoxin in solution. It is decanted, phenolated, and kept in the dark in the ice chest.

Neither of these methods would seem to be entirely satisfactory. The autolysate is open to the suspicion that during the process of lysis the toxin may be altered. The "shake extract" is obviously an incomplete procedure. The first step, therefore, in the present investigation was to attempt to find an improved method for the purpose of extracting its endotoxin from the meningococcus.

Besredka's Method of Extracting Endotoxin.

An examination of the literature on the subject of endotoxin soon showed that a method that was likely to be of service was that introduced by M. Besredka, of the Pasteur Institute, in 1905, and used by him and others since with much success for extracting their respective endotoxins from *B. pestis*, *B. dysenteriae*, *B. typhosus*, *B. diphtheriae*, *B. influenzae*, *Micrococcus melitensis*, gonococcus, etc. The method, however, does not appear to have been applied previously to the meningococcus. The procedure of Besredka is as follows:

The growth is removed from numerous cultures of the organism and dried *in vacuo* over sulphuric acid. The dry deposit is then scraped off, reduced to powder in a mortar, and stored in a dry place in the dark. This material Besredka calls "solid endotoxin," and it is found as a rule to be exceedingly toxic to animals. To extract the soluble toxin from it, a weighed amount of the solid endotoxin is mixed with a definite quantity of salt and ground up by hand in an agate mortar most carefully and thoroughly. When the mixture of dried bacteria and salt has been reduced to an impalpable powder, distilled water is added drop by drop, grinding the while, until the proportion of salt present is that of normal saline. The whole process takes about an hour, and at the end the mixture is allowed to stand, and if necessary is centrifuged until all detritus has settled to the bottom. The supernatant fluid, which is slightly opaque, is then removed and its toxicity determined in the usual manner.

In applying this method to the meningococcus a few modifications have been made. In the first place, as the result of comparative trials in which the degree of disintegration of the coccus was followed microscopically, and the toxicity of the extract determined on mice, I have abandoned the salt and use sterile sand instead, the extract being made entirely with distilled water. The procedure is as follows:

A meningococcus is selected of known serological type, and of such pathogenicity that one-tenth part of an eighteen hours' slope culture on trypagar when injected intraperitoneally into a mouse produces death within forty-eight hours. Such a culture being available, as many Petri dishes as possible of ordinary trypagar are inoculated with it and incubated for eighteen hours at 37° C. It is hardly advisable to work with less than fifty of such plates at a time. To remove the growth, 2 c.cm. of saline is poured on each plate, the growth is then raked off by a bent iron wire, and the suspension poured into a sterile test tube. A film preparation is made from each tube, stained by Gram and examined microscopically in order to exclude possible contaminations. The pure suspensions are mixed and centrifuged at top speed for an hour or more until the bulk of the cocci have been deposited. The top fluid is then thrown away, and the sediment of cocci evacuated into a Petri dish, 5 per cent. of ether added, and the dish placed with the cover off in a desiccator the bottom of which contains sulphuric acid. This desiccator is already connected to a manometer, and also to a powerful vacuum hand pump, designed and made for me some years ago by Mr. Fleuss of the Pulsometer Company. After receiving the dish, the desiccator is exhausted until a minus pressure of about 70 cm. of mercury has been obtained; the tap is then closed, the desiccator disconnected, and placed in the incubator at 37° C. overnight. Next morning the contents of the Petri dish are seen to be quite dry; the dish is taken out, the deposit scraped off, reduced to powder in a mortar, and examined microscopically. The powder consists entirely of dried bodies of meningococci. It is weighed and stored in a glass-stopped bottle kept in a dry cupboard in the dark.

Before a desiccator is used for this purpose trials must be made to see how much water it will absorb in a night at 37° C. after being exhausted; and care must always be taken to ensure that the suspension of sedimented cocci placed in the Petri dish does not exceed this quantity. The ether is added to prevent the growth of air contaminations, which at first gave much trouble. Once the apparatus is in good working order, the manufacture of dried coccus proceeds without hitch; but microscopical examination both of the suspensions from the plates, and of the dried end-product, must never be omitted. We have found that by this method a hundred ordinary plates of meningococcus yield on an average about 1.8 grams of dried cocci.

Mode of Extracting the Soluble Endotoxin from the Dried Cocci.

A solution of the endotoxin is prepared in the following manner:

0.1 gram of the dried cocci is weighed out and placed with an equal amount of sterilized sand in an agate mortar. The mixture is carefully and thoroughly ground up by hand until the whole has been reduced to an impalpable powder. This generally takes about half an hour. Sterile freshly distilled water is then added drop by drop, and the grinding continued for another half-hour, until 5 c.cm. of distilled water has been added. The mixture is next poured off into a graduated centrifuge tube, and the amount made up to 5 c.cm. if any loss has occurred through evaporation. The tube is stood overnight in the ice chest, and next morning centrifuged at top speed until all detritus has settled to the bottom. The opaque supernatant fluid, which has an appearance somewhat resembling that of concentrated lemonade, is then decanted. This is the standard extract. If it is to be used for rabbits, 0.5 per cent. of phenol may be added, but if for mice intraperitoneally, phenol is better avoided, and a few drops of ether added as a preservative.

When larger amounts are required, successive lots of the dried coccus and sand are ground up and the aqueous extracts mixed.

Toxicity of the Dried Meningococcus and of its Aqueous Extract for Laboratory Animals.

The following are the results in mice and rabbits:

1. *Mice.* It has been found that the dried and powdered meningococcus prepared in the manner described is fatal to mice intraperitoneally in a dose varying from 2 to 10 mg. The results are generally quite regular, provided that the powder is ground sufficiently fine. For purposes of testing samples of serum, chief use has been made of the aqueous extract, the toxicity of which is always determined in duplicate, and the lowest dose at which both mice succumb within forty-eight hours taken as the M.L.D. Mice submitted to the action of the endotoxin of meningococcus become extremely prostrated, and their appearance suggests that the toxin has a direct action on their central nervous system. A proportion of these mice develop diarrhoea. *Post mortem* the right heart is usually dilated, and the spleen is often much enlarged.

2. *Rabbits.* When injected intravenously into rabbits the aqueous extract of the dried coccus seems to act in exactly the same manner as a large dose of the living meningococcus. From some observations carried out in conjunction with Major A. S. G. Bell, it would appear that when a rapidly fatal dose either of the living meningococcus or of the aqueous extract of the dried coccus is administered intravenously to these animals the temperature falls continuously until death, which may be ushered in by convulsions. A similar lowering of temperature was observed by Flexner in guinea-pigs that received a fatal dose of the living coccus intraperitoneally. Rabbits that die from an intravenous injection either of the living coccus or of the aqueous extract of the dried coccus often show *post mortem* petechial haemorrhages. These are especially frequent under the skin, and are thus similar to the subcutaneous haemorrhages seen in some acute cases in man of cerebro-spinal fever.

The aqueous extract of the dried meningococcus contains a considerable proportion of the bacterial protein in solution as well as the toxin. This is evident from the fact, amongst others, that extracts made in the same way from non-virulent meningococci, while containing the coccal endoprotein in solution, show a relatively small amount of endotoxin.

The extract of the dried coccus prepared in the manner described has recently been found to contain a substance lytic for the red blood corpuscles of man and also of the rabbit, mouse, and guinea-pig. From present observations, this substance appears to withstand heating for

half an hour to 60° C., though haemolysis may be delayed by the treatment. The haemolytic substance is present in extracts of the dried bodies of specimens of all four types, and observations are now in progress to determine (1) whether it is the same in all of them, or not; (2) whether it forms, as seems possible, an index to the degree of disintegration of the coccus; and (3) whether the presence of antihaemolysin in antimeningococcus serum does, or does not, form an index of the presence of anti-endotoxin.

Some further experiments are in progress with a view to determining whether its charge of endotoxin can be increased by passing the meningococcus through a succession of mice. A number of meningococci have been passed through mice without increasing their virulence. In the case of one meningococcus, however—a specimen of Type I from a fulminating case—it was found that, after passage through five mice in succession, the virulence of the living coccus for the mouse had increased tenfold; but, in spite of this increase in virulence for the mouse, no increase could be detected in the amount of endotoxin for that animal contained by the coccus when dried and extracted. This result is of considerable interest because it suggests that, in addition to the charge of endotoxin, another factor may be concerned in the virulence of the meningococcus. The matter is at present being investigated by Dr. C. Shearer, F.R.S.

The antigenic value of the aqueous extract of the dried meningococcus is at present under investigation at the Central Laboratory. From present results it would appear to be serologically specific in much the same manner that the whole coccus is when injected into an animal such as the rabbit.

The Anti-endotoxic Value of Current Examples of Antimeningococcus Serum Supplied for Therapeutic Use.

By extracting their endotoxin in the manner described Besredka and his colleagues have been able to define the anti-endotoxic value of serums prepared against the micro-organisms of bacillary dysentery, plague, and typhoid respectively. It was found that in the case of the particular serums examined by him 1 c.cm. of the antidysentery serum neutralized 2,400 lethal doses of the dysentery endotoxin; 1 c.cm. of the antiplague serum neutralized 200 lethal doses of the plague endotoxin; and 1 to 2 c.cm. of the antityphoid serum neutralized 30 lethal doses of the endotoxin of the typhoid bacillus.

The anti-endotoxic value of antimeningococcus serum has been determined by Dopter and also by Wassermann, Kraus, and their co-workers. Dopter, who used an autolysate for this purpose, considers, as a result of his observations, that 1 c.cm. of antimeningococcus serum suitable for clinical use should neutralize five lethal doses of endotoxin. As a result of the observations of Wassermann and Leuchs, Kraus, and others, who used "shake extracts," it has been laid down that 1 c.cm. of antimeningococcus serum suitable for therapeutic use should neutralize four lethal doses of meningococcus endotoxin. The subdivision of the meningococcus group into a number of serologically distinct types had not been effected at the time when these observations were made.

Now the anti-endotoxic standard laid down for antimeningococcus serum by these observers cannot be regarded as anything but low in comparison with the anti-endotoxic values found by Besredka in case of the three antibacillary serums. Since there is at present no evidence, so far as I am aware, that the endotoxin of the meningococcus is more toxic to the horse than the powerful endotoxins of plague or dysentery, it would seem probable that the relative scarcity of anti-endotoxin in antimeningococcus serum is due to some special difficulty in the case of the meningococcus that has not yet been defined and overcome. For reasons given later the cause is most likely to lie in the form of meningococcus antigen used for preparing the horses. Some preliminary experiments upon this subject will be mentioned.

The method which I have used for testing antimeningococcus serums in respect of their content of anti-endotoxin is as follows:

All the serums are examined in duplicate, and in addition to the specimens of antimeningococcus serum for trial, a control is always carried out with normal horse serum. Two sterile watch-glasses are put out for each serum, and every watch-glass is enclosed in a Petri dish. With a 1 c.cm. pipette, graduated in tenths, the M.L.D. of endotoxin is measured out into each watch-glass. A measured amount of serum is then added, the covers are replaced, and the Petri dishes placed for thirty minutes in the incubator at 37°C. in order to allow the endotoxin and anti-endotoxin to unite. When taken out of the incubator, many of these serums are seen to have produced an excellent precipitin reaction, which, however, by no means necessarily implies the presence of anti-endotoxin. The contents of the watch-glasses are then injected intraperitoneally each into an individual mouse. The mice are placed in sets of stalls specially designed for the purpose by Major T. G. M. Hine, and are kept under observation for three days.

TABLE I.—*Details of an Experiment in which Five Specimens of Antimeningococcus Serum were Tested against a Minimal Lethal Dose of Endotoxin of Type I and Type II Meningococcus respectively.*

Serum.	Amount.	Type I Endotoxin.	Result.	Type II Endotoxin.	Result.
Normal	0.5	0.2	+	0.2	+
	,,	,,	+	,,	+
A.	0.5	0.2	+	0.2	+
	,,	,,	+	,,	+
B.	0.5	0.2	−	0.2	+
	,,	,,	−	,,	−
C.	0.5	0.2	−	0.2	+
	,,	,,	−	,,	+
D.	0.5	0.2	+	0.2	−
	,,	,,	+	,,	−
E.	0.5	0.2	+	0.2	−
	,,	,,	+	,,	−

+ = Mouse died.

It is clear that in the dose tested (0.5 c.cm.), serum A, in spite of having an excellent amount of precipitin, agglutinin, and, from Captain Tulloch's observations, of opsonin also for the two commonest types of the meningococcus, is deficient in anti-endotoxin to Type I and weak in this antibody to Type II. Serum B, which gave excellent clinical results two years ago, still contains anti-endotoxin to Type I, but is now weak in this antibody to the endotoxin of Type II. Serum C, recently made by pooling the serums of univalent horses, has anti-endotoxin to both these types of the meningococcus. The two remaining serums only neutralize the endotoxin of Type II in the amount tested—namely, 0.5 c.cm.

Now this result cannot be considered satisfactory. The horses providing the serum had received numerous injections of cultures of current meningococci, yet a proportion of these samples of their serum put up for therapeutic use fails to show an appreciable amount of anti-endotoxin for one or other of the two commonest types of the meningococcus in 0.5 c.cm. As the cause almost certainly lies in the kind of antigen used for preparing the horses, a series of observations is now in progress for the purpose of defining the relative value of various preparations of the meningococcus for stimulating the production of anti-endotoxin.

As a preliminary measure the matter is being worked out on rabbits, and if successful, it is hoped, with the co-operation of those who are preparing antimeningococcus serum, to apply the result to horses at present in course of immunization against the meningococcus.

In the first place an investigation was made of the anti-endotoxic value of the serum of a set of rabbits already in course of immunization at the Central Laboratory. Two of these animals had been prepared for over six weeks against first killed, and then living cultures of meningococcus Type I (strain Littledale). Two more had been under similar treatment for the same period against living cultures of meningococcus Type II (strain Harrison). All these rabbits stand intravenously the whole of the growth of an eighteen hours' slope culture of these respective meningococci without more than temporary loss of weight, and without marked symptoms; and their blood contains a good yield of agglutinin for the homologous coccus; yet none of the rabbits contain enough anti-endotoxin in 0.5 c.cm. of their serum to neutralize one lethal dose of endotoxin of the homologous type of meningococcus. Now neither of the meningococci injected into these rabbits is particularly virulent for the mouse—the fatal dose for the mouse intraperitoneally being from one-half to the whole of an eighteen hours' slope culture, and also the dried bodies of the particular meningococci in question have been found to yield but little endotoxin. Some more rabbits, therefore, are at present under immunization with further samples of meningococci of the same two types, but of higher virulence for the mouse, and giving a good yield of endotoxin in aqueous extracts of their

dried bodies. At the same time, further rabbits are being prepared with autolysates of these virulent meningococci, and others with the aqueous extracts of the same cocci after being dried and powdered. The value is also being determined of sensitizing the coccus, or its contents, before injection. By this means it is hoped to define the relative value of each of these preparations respectively of the same meningococcus for exciting the production of anti-endotoxin. It may be of interest to state that one rabbit that had received intravenously a dose of 0.1 c.cm. of the aqueous extract of a virulent example of Type I meningococcus prepared in the standard manner described previously, followed a week later by a dose of 0.2 c.cm., in spite of considerable loss of weight, showed on the sixteenth day after receiving the first dose sufficient anti-endotoxin in 0.5 c.cm. of its serum to neutralize completely a lethal dose of Type I endotoxin for the mouse. Captain Tulloch also found this serum to contain a good yield of opsonin for Type I. Here the matter at present stands.

CONCLUSION.

It would seem, then, that, as regards anti-endotoxin, there is at the present time much room for improvement in, at any rate, a considerable proportion of the samples of antimeningococcus serum supplied for therapeutic use. But it should be stated that several of these serums, though deficient in anti-endotoxin, have been found by Captain Tulloch, who is making a special study of meningococcus opsonins, to contain a good amount of opsonin which in the eyes of Flexner and some other authorities is of almost, if not quite, equal clinical importance. However this may be, few, I think, will deny that it is very desirable that all antimeningococcus serum sent out for therapeutic use as "multivalent" should contain as high a yield as possible not only of opsonins but also of anti-endotoxins capable of neutralizing the toxic principles of the commonest members of the meningococcus group.

The chief obstacle hitherto has been the absence of a trustworthy and simple procedure for determining the amount of anti-endotoxin in antimeningococcus serum. It is hoped that the present method may be found to contribute towards the end in view, because it would seem that some of the best results in the way of lowering the mortality from cerebro-spinal fever during the present outbreak have been obtained by early intrathecal administration of serum that, in addition to a good yield of opsonins, has also been found to contain an appreciable quantity of antibodies capable of neutralizing the endotoxins of each of the two commonest types of the meningococcus.

BIBLIOGRAPHY.

Flexner, S.: *Journ. Exper. Med.*, vol. ix, 1907.

Dopter, C.: *Annales de l'Institut Pasteur*, vol. xxiii, 1910, pp. 95–113.

Kolle, W., and Wassermann, A.: *Deut. med. Woch.*, vol. xxxii, No. 16, 1906, pp. 609–612.

Besredka: *Annales de l'Institut Pasteur*, vol. xix, 1905, pp. 477–480. Ibid., vol. xx, 1906, pp. 149–154, and pp. 304–310. Also article "Endotoxines Microbiennes," *Bulletin de l'Institut Pasteur*, 1914, pp. 145–154, and 193–205.

Wassermann and Leuchs, Kraus, etc., quoted from article "Die Wertbemessung des Meningokokken-Serums," by R. Otto and K. H. Boehneke in Kolle and Wassermann's *Handbuch der Pathogenen Mikroorganismen*, 2nd edit., Jena, 1913, Bd. 2, pp. 1230–1233. See also article "Gewinnung des Meningokokkensera," by St. Baecher, in Kraus and Levaditi's *Handbuch der Technik und Methodik der Immunitätsforschung*, Jena, 1911, Erster Ersangzunsband, p. 80.

NOTES ON ASTHMA.

BY

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GLASGOW.

SEVENTEEN years ago I put forward the view that asthma is in most cases essentially a toxaemia. More than once in this JOURNAL I have given arguments for this view and have amplified them in my book, and details will not be repeated, but some of the criticisms of that book and much recent writing show that that view is still far from being widely accepted, and yet the proof that asthma is a toxaemia is based not only on the clinical facts but on the best of all evidence—therapeutical success. Of 390 cases about 70 per cent. can fairly be reckoned as cured, or almost so. These cases have come from all parts of this country as well as from some of the colonies, so that "place" has less influence on asthma than was believed.

Among these 390 cases two groups become prominent clinically. One group is that of week-end asthma. The asthmatic attacks in working-class patients tend to appear at the week end, and are clearly associated with the overfeeding and under-exercise of the week end. I have repeatedly dealt with this point. The only possible explanation of this periodicity is the upset metabolism resulting in a form of toxaemia which induces asthma. This class of case is usually, and for obvious reasons, readily amenable to treatment. This week-end periodicity is not confined to asthma or to man. It is found in some forms of albuminuria, angioneurotic oedema, and epilepsy; also in the "Monday morning disease" of horses (Woods Hutchinson). The toxaemia in this group is interesting as helping to explain the next group.

The second large group shows a clinical history of bronchitis in children, recurrent year after year, until ultimately what is called spasmodic asthma is diagnosed. The patient may be adolescent or adult before he realizes that he has asthma. In this class eczema is a prominent concomitant. Treatment proves this eczema and this asthma to be due to coddling, to confinement, and to carbohydrate excess, chiefly in the form of milk puddings; for alteration of these conditions means immediate improvement and ultimate cure of the diseases. Here again we have an imperfect metabolism leading to toxaemia, which, in turn, reveals itself in catarrh—of the skin as eczema; of the respiratory tract as various forms of rhinitis, enlarged adenoids, laryngismus stridulosa, bronchitis. This toxaemia acts not only on skin and mucous membrane, but, sooner or later, on the nervous system. And so the catarrhal condition may be accompanied or followed by a spasmodic state, hence—sometimes in combination—urticaria, angioneurotic oedema of the mucous membranes, laryngismus, paroxysmal sneezing, asthma.

Two points are of great importance in this connexion. First, the nose as the respiratory orifice, and the most sensitive area of the whole respiratory tract. If the nose is not right the lower mucous membrane is sooner or later likely to become affected by spasm as well as catarrh; hence, in treatment, attention must be directed to the nose as well as to the toxaemia. Secondly, the widespread connexion of the vagus with the digestive as well as with the respiratory tract has ever to be kept in mind. It is possible the vagus may be directly affected by the toxaemia. All this points to the importance of dietetic treatment, which Hyde Salter so rightly emphasized. Treatment of these two classes of cases is usually soon and absolutely successful; but where the toxaemia has lasted many years, and the mucous membrane has become so altered that *restitutio ad integrum* is not to be expected, the most we can hope for is improvement, though even here the spasmodic attacks may be abolished. I have seen recovery after twenty, thirty, and even forty years of asthma.

Consideration of the circumstances under which asthma arises in domesticated animals goes to support the view that it is a toxaemia. The subject is disappointingly dealt with in British veterinary textbooks, but the account in the American one by Law (1896) is excellent. What he says as to the origin of asthma in dogs and horses exactly bears out what I have written here and elsewhere as to its origin in man. Asthma in dogs "is almost exclusively confined to those kept indoors, over-fed, without exercise, plethoric, and constipated." Everyone is familiar with the wheezy, asthmatic pet pug, but is apt to miss the fact that it frequently belongs to a pampered mistress—fat, wheezy, and asthmatic for a like reason. Law continues: "The disease is one of pet dogs, kept in towns, deprived of exercise, of fresh air, and of the opportunity to relieve the bowels at will; and gorged with highly spiced meats and sweets at least three times a day. Sluggishness and obesity are marked characteristics of the dog when first attacked, though in the advanced stages the violence of the paroxysms and their frequent recurrence may have induced extreme emaciation." And Mr. Dan Hamilton, M.R.C.V.S., informs me that eczema in dogs is caused in precisely the same way. Similarly, Law connects asthma in horses directly with the feeding and want of exercise. Veterinary surgeons have often told me that it is possible to induce asthma in almost any colt by improper feeding. For the following instance I am indebted to Mr. Begg, veterinary surgeon to Lanark County Council. The case is too long to give except in summary; but the details all support the views stated:

A six-year-old van horse, which had cost £46, was seen in January, 1903, on account of asthma, was put in a loose-box, fed on soft oleaginous rations and damped fodder. By the end of March he was reduced to a skeleton—weak, staggering, and

brought almost to his knees by paroxysms of coughing; value £3. He was turned out to grass in April, improved at once, and by July there were no signs of asthma. He was returned to work, but during the following winter, probably owing to the confinement and altered feeding, he developed a less severe attack of asthma. This passed off, and in July he was sold for £40, and was hale and working five years later.

It is likely that many diseases in animals, such as pleurisy and tuberculosis, are lumped together as asthma; but it is trifling with the subject to dismiss asthma in birds as aspergillosis. If the disturbed metabolism arising from over-feeding and under-exercise is the cause of asthma, the bird in which we should most expect it is the canary; and canary breeders are quite familiar with what they rightly call asthma. A bird has naturally a more active respiration and metabolism than man; but a caged canary can get no exercise, and has little to do but feed.

A canary breeder got an asthmatic canary from a neighbour to destroy. It had been fed *ad lib.* on all sorts of seed and other food. He himself had been cured of asthma many years ago, and instead of destroying the bird, thought he would try a plan similar to that I had laid down for him. Instead of filling up its dish with a day's food, he gave it small regular feeds of plain canary seed, and thus cured it. I have had many asthmatic canaries examined by pathologists, who have found tuberculosis in none.

Asthma is probably a disease of civilization. While man had to hunt and kill what he ate, asthma was not likely to arise. An asthmatic visited a Red Indian location in Canada. An old squaw said to him: "You breathe heavy." "Yes; I have asthma." "You English eat too much." "What would you have me do?" She held up two fingers: "Two days no eating." Which was exactly the advice I had given, and which elicited the story. Inquiry among medical friends in various parts of the globe has elicited a number of interesting facts which, however, require sifting, which cannot be detailed here, but of which the following is a summary:

In Central Africa, still uncivilized, there is no overcrowding, the diet is mixed; tuberculosis, asthma, and enlarged tonsils and adenoids are unknown. In China and Manchuria, while the day is largely spent in the open air, overcrowding is common at night; the diet is largely carbohydrate (rice), but no milk is drunk; teeth are often filthy; asthma and enlarged tonsils and adenoids are rare, tuberculosis of glands and lung common. In Siam the life is rather more indoors, the diet more mixed, and milk is drunk and betel chewing common; teeth are filthy; asthma and enlarged tonsils and adenoids not uncommon; tuberculosis greatly increasing. In India conditions vary in different parts and among the different races, but carbohydrate forms a large proportion of the diet, and milk is drunk; tuberculosis is common, asthma also in some parts, but enlarged tonsils and adenoids do not seem to be common.

The inference seems to be that asthma tends to appear in proportion as the life is spent indoors, as there is overcrowding, as carbohydrate forms the staple diet, and as milk is drunk. This about milk is interesting, because my experience proves beyond doubt that asthma cannot be cured when much milk, raw or boiled, is taken. I have cured two cases of hay fever in adolescents who took large quantities of milk by simply cutting it down.

Asthma, then, being in many if not in most cases a toxaemia due to want of adaptation of food, not only to the needs, but to the biochemical peculiarities of the individual, its essential treatment is obvious, simple, but involving much painstaking trouble in every case. I have dealt with this elsewhere at length.

Some think that attention to the nose has been overemphasized, but, for reasons given above, this is doubtful. After that the main thing is to procure elimination of toxins and prevention of further toxaemia; or, to use Guelpa's phrase, "Désintoxication et renouvellement des tissus." Long before the appearance of Guelpa's book the fact of week-end asthma and the voluntary fasting of the asthmatic during his paroxysm till it ceased had taught me the value of fasting, and it was practised with success. And Hyde Salter sixty years ago rightly took pains with the individual diet. But not enough attention has been paid to cookery. With an unusually irritable vagus it is important that the digestive organs be taxed as little as possible.

THE value of the estate of Sir Leander Starr Jameson has been sworn at £45,082 18s. 10d., the net personalty being £42,747.

A SURVEY OF 1,064 OPERATIONS FOR THE COMPLETE REMOVAL OF TONSILS AND ADENOIDS,

WITH A CONSIDERATION OF THE POSSIBILITY OF A REDUCTION IN THE NUMBER OF OPERATIONS.

BY

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THE consideration of the large number of operations performed for the removal of the faucial tonsils and adenoid growth, or hypertrophied pharyngeal tonsil, makes one pause to wonder whether all these operations are really necessary. It must be remembered that the tonsils, both faucial and pharyngeal, are normal structures present for some definite purpose in every child.

When the tonsils and adenoid growths are septic, diseased, or hypertrophied, so that their presence produces definite and harmful symptoms, every one will agree that they should be efficiently removed, but the predisposing and exciting causes of infection and enlargement of these structures should be reviewed before deciding that operation is necessary. The experience gained by a close study of 1,064 cases, in addition to those seen during seven years in charge of a London County Council school clinic for affections of the nose, throat, and ear, may throw some light on their etiology. The cases have been carefully examined before operation, they have been seen two or three hours after operation, again one week afterwards, and, finally, six months later.

Etiology.

The age at which children require operation varies, but I have not seen one case of congenital enlargement of the tonsils or adenoid tissue, and agree with Lambert Lack[1] in doubting its occurrence. The youngest case was aged 16 months, and there were only five under 2 years. Children operated on under 2 often have recurrence, and the best results are obtained when the operation is performed between the ages of 3 and 6.

The strumous or scrofulous child is a common victim of "tonsils and adenoids" and has a typical appearance with enlargement of the lymphatic glands, phlyctenules of the cornea, excoriation of the nostrils by nasal discharge; such children lack immunity to catarrhal affections and to tuberculosis. This type of child runs in families, several members of the same family are strumous, and there is a family history of tuberculosis, suggesting that the condition is due to a tuberculous predisposition, in addition to bad surroundings in a poor home in a large city. The removal of tonsils and adenoids in such a child, followed by a visit to the seaside with good surroundings and food, leads to a vast improvement in health.

The most marked cases of enlarged tonsils and adenoids amongst children occur in those in whom there is evidence of dirty, badly ventilated, unhealthy homes with their cheaper carbohydrate diet. In these cases parasites, particularly *Pediculus capitis*, are invariably present, and the fact that they cause enlargement of the superficial cervical glands makes one consider what influence pediculi have on the lymphatic tissue of the pharynx. To operate on these children and to send them back to their squalid surroundings is to court failure. The removal of tonsils and adenoids in these cases is almost as illogical as scouring the hair of patients to remove pediculi and immediately allowing them to use the same dirty, infected pillow and clothes. The percentage of well-cared-for children with good surroundings seen in private practice who require operation is much smaller than in the case of poorer children seen at hospital.

Cameron[2] has shown that excessive carbohydrate diet among the poorer classes, which is the rule owing to its cheapness, produces a catarrhal tendency. Again, there is evidence to indicate that infection—for example, the tubercle bacillus—is conveyed to the tonsils by contaminated water, milk, and food.

The effect of locality is difficult to estimate, and at one time it was found that a large number of the cases came from the low-lying districts of the river banks, and from a valley town where there were watercress beds and a stream running through its centre, but statistics of this

sort tend to be erroneous. In the dry climate of southern Italy adenoid operations are extremely rare.

Scarlet fever, diphtheria, measles, and whooping-cough have been credited with a predisposing influence. Measles certainly has preceded operation in a large number of cases, but since the majority of children have had the various fevers, the estimation of their effect on the lymphoid tissue is difficult. Children with enlarged tonsils and adenoids are much more liable to have acute otitis media as a complication of scarlet fever, measles, and diphtheria.

Some general infections enter the body through the tonsil, and this organ is said to be a portal for infection of the vermiform appendix, for acute rheumatism, tuberculosis of the cervical glands, and, most probably, scarlet fever. Tonsillitis frequently precedes or follows appendicitis, and tonsillitis can be part of a general intestinal infection. Poynton and Paine[3] record a case of appendicitis following follicular tonsillitis, in which the organisms in the tonsils and appendix were identical; they showed that the appendicitis was a result of a blood infection, and that the cause of appendicitis may be a streptococcal invasion through the blood stream from a follicular tonsillitis. Brian Metcalfe[4] records two cases of appendicitis immediately following tonsillectomy. Appendicitis associated with tonsillitis is always severe, and requires immediate operation. It is stated that the tonsil is the portal of infection for acute and chronic rheumatism; tonsillitis frequently precedes rheumatism. I have often removed unhealthy tonsils in patients who have had acute rheumatism; also in cases of chorea and chronic rheumatism. In the cases of acute rheumatism and chorea both diseases may recur, and P. R. Cooper[5] records a case of severe acute rheumatism which followed a few months after tonsillectomy.

In two of my cases, seen three years after enucleation, there had been no return of acute rheumatism, and their general health had been excellent. In one case of erythema nodosum and chronic rheumatism the symptoms had disappeared since enucleation of the tonsils three years before. A similar result was obtained in three cases of chorea.

Mitchell found the bovine tubercle bacillus in the tonsils of fifty-one out of seventy-two cases of children with tuberculous cervical glands and also traced the source of the bacillus to infected milk. Of the tonsils of ninety children with no infection of the cervical glands, 6.5 per cent. gave histological evidence of tubercle bacillus, and 10 per cent. gave a positive result with the guinea-pig. My experience coincides with this result, and in practically all the cases of tuberculosis of the cervical glands (upper deep cervical set) seen the tonsil was unhealthy and required removal. It was a small flat, spongy tonsil, and not a large hypertrophied tonsil.

The most frequent exciting cause of enlarged tonsils and adenoid growth is the common or influenzal cold, measles, or some other specific infection. In a large number of colds there is a mild or even severe tonsillitis—in fact, tonsillitis is frequently called influenza by the patients and their relatives. The doctor is generally asked to see a child during these illnesses, and as the symptoms of a prolonged cold resemble those found when the tonsils and adenoids require removal, an operation is advised; but when the child is seen some time after the cold or acute infection has disappeared there may be no signs of tonsil enlargement or adenoid growth and all the symptoms have disappeared. In cases of this kind it is advisable to wait until the acute infection has subsided before deciding to operate. It occasionally happens when a child is seen during the winter or catarrhal season that the hypertrophy of the tonsils and adenoid growth and the necessity for removal are well marked, but for various reasons operation is delayed until the warmer, drier months of summer, and then the small amount of adenoid growth and the small, normal-looking tonsils removed, make the operator wonder whether he has done an unnecessary operation. This occurrence bears out the fact that the tonsil and adenoid enlargement is often temporary, and that a child should be kept under observation before finally deciding to operate. Removal of tonsils and adenoids before an acute infection has completely subsided, or during the acute stage, leads to increased sepsis, otitis media, suppuration of the cervical glands, and all the septic complications of such an operation, which, under the best of conditions, is always accompanied by a certain amount of sepsis confined to the wound.

Local sepsis, particularly bad teeth and nasal suppuration, are frequent causes of enlargement and inflammation of the tonsils. It has been my custom for many years to send all tonsil and adenoid cases with bad teeth to the dentist to have the mouth put in thorough order before operation, and no operation is performed until the gums have completely healed. I am in entire agreement with T. B. Layton,[6] who stated that the number of cases sent for dental care who were found on their return not to require operation was surprising. Even in adults the tonsils will visibly shrink, so to speak, after the removal of oral sepsis. Practically all cases of suppurative tonsillitis or quinsy are accompanied by oral sepsis, and, in a clean mouth, severe follicular tonsillitis will recover without suppuration or abscess. A tonsil and adenoid operation done in the presence of oral sepsis leads to septic complications, particularly otitis media.

Nasal sinus suppuration is rare in children, but the great majority of young adults with nasal suppuration have enlargement of the adenoid tissue of the nasopharynx and tonsils which disappears with the successful treatment of the suppuration. One attack of tonsillitis does not call for removal of the tonsils, but frequent attacks occurring once or twice a year with enlargement of the cervical lymphatic glands (tonsil glands) indicates a thoroughly septic tonsil which requires enucleation.

Causes of Operative Failure.

The first of the common causes of the recurrent operation for removal of tonsils and adenoids is tonsillotomy, or the incomplete removal of the tonsil; the septic stumps are more susceptible to repeated attacks of tonsillitis; I have seen a schoolboy who has had tonsillitis every term after tonsillotomy, and a girl who had nine attacks of tonsillitis in a year following tonsillotomy, and other similar cases.

At a discussion on the relative values of tonsillotomy and tonsillectomy at the International Congress, 1913, the majority present were strongly in favour of tonsillectomy, or complete enucleation of the tonsil. My figures down to 1913 showed that, out of 1,520 cases operated on, 41 had had tonsillotomy performed elsewhere and enucleation of the tonsil stumps had to be done. The examination of another 78 cases of tonsillotomy showed that 39, or 50 per cent., were failures, and in 36 enucleation of the stumps had to be performed. Every surgeon has his own method of enucleation, but the most satisfactory and surest method is that of "dissection" as described by George Waugh.[7]

The second cause of failure or recurrent operation is the performance of the operation by inexperienced and occasional operators. The removal of tonsils and adenoids requires considerable practice.

The third cause of recurrence has to do with the adenoid operation. Children are frequently seen with anterior nasal obstruction, such as a septal spur or marked deformity and deviation of the septum, in which the obstruction is in front of the nasopharynx and produces symptoms and signs of adenoid growth, yet the nasopharynx has been repeatedly scraped for adenoids with no beneficial result. Of fifty-two recurrent operations, ten were due to this cause of nasal obstruction.

Enlargement of the posterior ends of the inferior turbinals has been stated by some to be a cause of recurrent operations, and some operators remove the posterior ends of the turbinals when removing the adenoid growth. I have looked for this condition for many years and have not found permanent enlargement of the posterior ends in children, and I do not consider it necessary to add to the operation by their removal.

There are cases of recurrent adenoid growth, fortunately rare, which, in spite of the fact that the growth has been thoroughly and efficiently removed, require second or third operations, and this suggests that the effect rather than the cause has been removed.

Complications.

The complications of operation are remarkably few, usually remote and due to sepsis. The absence of complications and of any observed disadvantage to the patient

by the loss of the tissues removed will perhaps account for the great popularity of the operation. The immediate complications consist of haemorrhage and shock, both of which are uncommon, more particularly shock. Neither haemorrhage nor shock occurred in any of the 1,064 cases. Most operators see that haemorrhage has ceased, or is insignificant, before the operation is completed. Shock, when it occurs, is the result of insufficient or inefficient anaesthesia.

The remote complications are chiefly the result of sepsis. Acute otitis media occurred in 4 of the 1,064 cases, and one of the four required a simple mastoid operation. The incidence of otitis media can be diminished by careful management before and after operation. It is more common in hospital practice where the patients are treated as out-patients, and is practically absent in private practice where care is taken before and after operation and the patient's surroundings are better. The preparation of the mouth, the avoidance of operation during acute infections, and the rest in bed for three days after operation in a clean home diminishes the incidence of otitis media. In order to avoid operation during an acute infection or in children who are possibly sickening for any infectious fever, such as scarlet fever, measles, etc., the temperature is taken while they are waiting their turn for operation, and if the temperature is above 99° operation is postponed.

Severe scarlet fever and measles are known to follow operation with disastrous results. I have known of two cases in twelve years' experience; such cases do not return to hospital, and are not always observed, but E. W. Goodall and J. D. Rolleston, from a long experience of fever hospital work, both state that they have not seen more than a dozen such cases of scarlet fever or diphtheria following operation in twenty-five and seventeen years' experience respectively. In all cases before operation it is advisable to see that the ear passage is clear and does not contain wax, as a blocked meatus adds to the difficulty of treatment of otitis media. Suppuration of the cervical lymphatic glands is very rare, and I can only remember two or three cases in a period of twelve years; in the series here discussed there were none.

Results.

The results of operations in the carefully selected and well-marked cases are excellent; not only are the symptoms relieved, but there is a great improvement in the general health and comfort, due to the fact that the child sleeps better, its appetite is increased, the hearing improves, the frequent and prolonged colds cease, the flat chest develops, and growth is more rapid. The removal of adenoids in the so-called idiopathic asthma of the nervous, wheezy child has no beneficial effect, and most of these children have no adenoid growth. Idiopathic asthma must not be confused with the intermittent suffocative attacks during sleep, which are due to adenoids, and are cured by the removal of the growth.

A large number of children have attacks of earache and deafness during colds, with retraction of the drums, which frequently suppurate; and if such a case is allowed to continue without operation, the deafness or dullness of hearing becomes permanent, and is beyond cure. The affection of the ears makes operation imperative. In all cases of earache and deafness operated on the ears become normal, except in the older patients, in whom the damage has been done by the long duration of the inflammation. Cases of recent suppuration rapidly heal and the otorrhoea ceases.

The mouth breathing and frequent colds disappear if the patient is made to perform suitable exercises to expand the chest and to promote nasal breathing. No operation is complete unless followed by a course of breathing exercises and the teaching of children to blow their noses efficiently every morning. The parents are told that breathing exercises are as important as the operation, and should be carried out every day for at least six months, commencing a fortnight after operation.

Occasionally a school child will have a temperature, of obscure origin, of 100° with a rise to 102° or more for some weeks following a so-called influenzal cold which on careful inquiry is seen to have been tonsillitis. There is slight tonsillitis with enlargement of the cervical tonsil lymphatic glands. The enucleation of the tonsils cures the fever, and the cervical glands slowly disappear. There are two types of enlargement of the upper deep cervical set of glands as the result of infection of the tonsils. The first is inflammatory, and accompanies most attacks of acute tonsillitis, and disappears with the tonsillitis. In repeated attacks of tonsillitis the enlargement, which is limited to the tonsil gland of the upper deep cervical group, becomes chronic, but gradually disappears after the removal of the tonsils. The second type of enlargement is tuberculous, is more marked, and there is extension to the other glands of the deep cervical group. If the case is early and the glands are not caseating, removal of the tonsils with suitable antituberculous treatment results in their disappearance, but the majority of hospital cases require removal of the glands in addition to the tonsils.

Nocturnal enuresis has been stated to be due to adenoid growth and its accompanying suffocative attacks during sleep, but in my experience true regular enuresis occurring every night is rarely, if ever, due to adenoids. Very few children with well-marked adenoid growth have this symptom, and I have seen a number of cases of enuresis with absolutely no adenoid growth. Moreover, the removal of the adenoids has not cured the enuresis.

Whatever the function of the tonsil may be its structure and behaviour are similar to that of a lymphatic gland, and it is reasonable to suppose that the remaining lymphatic tissue of the pharyngeal wall, the lingual tonsil, and cervical glands compensate and take on the function of the tonsils and tissue removed, but I have not seen hypertrophy of any of these structures after operation, not even the cervical glands.

I have carefully examined a large number of children six months or more after operation, and have endeavoured to follow up cases, and I have not observed any deleterious effects or disadvantages following removal of tonsils and adenoids. I have not obtained any evidence to indicate that the removal of the tonsils predisposes these children to diphtheria, scarlet fever, or other acute infections, but I have seen several cases of unhealthy spongy tonsils yielding cultures of the Klebs-Loeffler bacillus weeks after the quarantine period had elapsed. E. W. Goodall and J. D. Rolleston both state that in their experience there is no reason to think that children who have had tonsils and adenoids removed are more susceptible to scarlet fever or diphtheria. I have not seen and have no records of tuberculosis of the cervical lymphatic glands appearing after removal of the tonsils.

In conclusion, when a child has a specific set of injurious symptoms which can be definitely attributed to the tonsils and adenoid growth, nothing but benefit results from removal, but there is a need for careful examination and selection of operation cases. An attempt should be made to ascertain and eliminate the cause of the condition under observation before the question of operation is finally settled.

REFERENCES.

[1] Lambert Lack, *The Diseases of the Nose and its Accessory Sinuses*, p. 369. [2] H. C. Cameron, BRITISH MEDICAL JOURNAL, June 9th, 1917, p. 753. [3] F. J. Poynton and A. Paine, *Lancet*, August 17th, 1912, p. 439. [4] Brian Metcalfe, BRITISH MEDICAL JOURNAL, November 1st, 1913. [5] P. R. Cooper, *Lancet*, July 24th, 1915, p. 199. [6] T. B. Layton, *Transactions*, Medical Society of London, vol. xxxvii, p. 246. [7] George Waugh, *Lancet*, 1909.

THE TREATMENT OF AMOEBIC DYSENTERY WITH EMETINE AND BISMUTH IODIDE.

BY

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DURING the months of July and August, 1917, 40 cases of amoebic dysentery admitted to a military hospital in Mesopotamia were treated with emetine and bismuth iodide, used either alone or in conjunction with emetine hydrochloride.

These cases formed in July 25 per cent. and in August 34 per cent. of all cases admitted in which blood and mucus were present in the stools. They also furnished all the severe cases and the deaths from dysentery during the above period. Four deaths occurred, in two of which hyperpyrexia from the intense heat undoubtedly hastened the end. The remaining two were due to peritonitis following perforation of dysenteric ulcers, and occurred in very debilitated subjects two or three days after admission.

The duration of the disease before admission to this hospital varied from three days to a fortnight, the average being about six days. In many cases a history could be elicited of previous attacks of dysentery in either Mesopotamia or India.

All patients treated were natives of India, and came from widely separated districts of that country. As this was the first opportunity I had of making a trial of emetine and bismuth iodide in a series of cases of amoebic dysentery the diagnosis of which could be confirmed, and the results of treatment checked by microscopical examination of the fresh stools, the following points were considered worthy of investigation:

1. The tendency, or otherwise, of the drug to produce vomiting.
2. Its action, either when given alone, or in conjunction with emetine hydrochloride, in
   (*a*) Acute cases showing active amoeboid forms in the stools;
   (*b*) Less acute cases in which encysting forms are appearing in the stools;
   (*c*) Chronic relapsing cases;

the results in all cases being checked by microscopical examination of the stools.

I. Vomiting.

The action of the drug in producing vomiting had to be taken into consideration, as keratin capsules were not available, and the drug had to be administered in the form of a powder or pill. Happily, it was found that the Indian tolerates the drug very well. The maximum single dose of three grains was never exceeded, and not more than four grains were given during the twenty-four hours. The most suitable dose was found to be two grains, in pill form, given once or twice a day, half an hour after a feed of milk, the pills being freshly made from the powder with a little gum excipient. A few of the cases complained of nausea after taking the drug, and sometimes the patient would vomit an hour or two later, but this was readily checked by the administration half an hour before of 15 drops of tincture of opium; tolerance was established in two or three days, and in no case did it become necessary to discontinue the drug from this cause.

II. Classification of Cases.

The cases divided themselves pretty definitely into the three classes given above, so that the action of the drug can be considered in its relation to each class.

Acute Cases.

In those cases in which the disease had been present three or four days, and in which several stools containing mainly blood and mucus were passed during the twenty-four hours, microscopical examination showed the presence of numerous amoebae of *histolytica* type. In the treatment of this class the best results were obtained by using 2 grains of emetine and bismuth iodide in pill at night and 1 grain of emetine hydrochloride hypodermically in the morning. A more rapid relief of the acute symptoms was obtained by this method than by the use of either drug alone; in fact, emetine and bismuth iodide, when given alone in acute cases, did not appear to have the same rapid action in relieving pain and tenesmus as emetine, but when used in combination with the latter drug in the above manner it certainly shortened the attack and established a more complete and earlier convalescence. The rapidity with which the stools became faecal and lost their blood and mucus was in some cases remarkable. Furthermore, there did not appear to be the same tendency to constipation, which so frequently follows the use of emetine alone.

The microscopical findings showed a rapid decline in the number of amoeboid forms in the stools after twenty-four hours, and by the end of a week the stools were reduced to one a day, were in appearance normal, and apparently free from amoebae in any form.

Case 1.

Havildar Major, admitted August 5th, 1917, with symptoms of dysentery, had been in hospital a fortnight previously with diarrhoea, which cleared up under salines. No amoebae were found at that time in the stools. On the second admission he was passing five or six stools daily, consisting solely of blood and mucus and containing numerous amoebae of *histolytica* type. Emetine 1 grain hypodermically in the morning and emetine and bismuth iodide 3 grains in pill at night were commenced on August 6th; there was slight nausea, but no vomiting after taking pill. Toleration was established after two days. On August 10th the dose of emetine and bismuth iodide was reduced to 2 grains. Blood and mucus were absent from the stool on August 8th, and pain and tenesmus disappeared. Stools one daily, semi-solid, until August 14th, when they became solid and free from amoebae. Returned to duty on August 17th. Total emetine injected, 12 grains; total emetine and bismuth iodide given 28 grains.

Case 2.

Driver, admitted July 23rd, 1917, with severe acute dysentery of four days' duration; passing numerous stools containing much blood and mucus. Active amoeboid forms of *E. histolytica* present. Treatment commenced on July 24th with emetine 1 grain hypodermically in the morning, and emetine and bismuth iodide 3 grains at night. Griping and tenesmus relieved after twenty-four hours. Blood and mucus in diminishing quantities present in stools up to August 1st. One normal stool passed on August 3rd which was free from blood, mucus, and amoebae. Patient then transferred to another hospital.

Subacute Cases in which Cysts were Present.

In cases which had passed the acute stage when admitted, and whose symptoms consisted of pain and tenderness along the course of the large bowel, more marked over the caecum and lower part of the descending colon and rectum, and the passage daily of two or three semi-solid or liquid faecal stools containing a little mucus and a trace of blood, good results were obtained by giving 2 grains of emetine and bismuth iodide in pill morning and evening, with an occasional dose of ½ oz. of sodium sulphate. Mucus and blood disappeared rapidly under this treatment, the tongue became clean, and the abdominal tenderness diminished, while, so far as could be judged with the laboratory appliances at disposal, cysts ceased to be found after five or six days of treatment. Treatment was continued until a total of 36 to 40 grains of emetine and bismuth iodide had been taken. The diet consisted of milk, sago, and rice pudding, chicken soup, and eggs.

Case 3.

Sepoy, admitted on August 18th, 1917, complaining of diarrhoea, pain, and tenderness along the course of the large bowel and the passing of small quantities of blood and mucus in the stools, of which he had two or three daily. Duration of illness fifteen days. No history of previous attacks. Two and four nuclear cysts found in stools. After a preliminary dose of ol. ricini, treatment was commenced on August 19th by giving 2 grains of emetine and bismuth iodide morning and evening. Blood and mucus were absent on August 21st, and the stools were normal and apparently free from cysts on August 23rd.

Case 4.

Driver, admitted on August 16th, 1917, complaining of diarrhoea, with the passage of small amounts of blood and mucus. Two to three stools daily. Illness of about a fortnight's duration. No history of previous attacks. Cysts in stool containing up to four nuclei. Emetine and bismuth iodide in 2 grain doses twice daily commenced on August 18th. Stools normal and free from cysts on August 21st.

Chronic Relapsing Cases.

Under this category are classed cases which had had one or more previous attacks of dysentery from which they had never fully recovered. When admitted to hospital they were very debilitated and anaemic. Usually of the "follower" class, they had continued their duties long after they should have reported sick. The stools passed—often sixteen to twenty in a day—consisted of blood, mucus and sloughs, while not infrequently blood alone was passed, and in considerable quantity. Great tenderness was complained of along the whole course of the large bowel, and there was much griping and tenesmus. Emaciation was extreme in some cases. These cases furnished all the four deaths occurring during the period under review, and the *post-mortem* examinations showed extensive ulceration and gangrene of the whole of the large bowel from caecum to anus. The stools contained numerous amoebae in all stages of development. Owing to the severity of the symptoms it was necessary to get these patients as quickly as possible under the influence of emetine, in order to destroy the amoeboid forms which were doing such harm to the already damaged coats of the bowel. Emetine hydrochloride, therefore, was given at first in doses of from a half to one grain hypodermically twice daily. Later on, as the symptoms improved, one or two grains of emetine and bismuth iodide were substituted for one of the doses of emetine. Small doses of morphine were used to allay pain and tenesmus, and promote sleep. Stimulants, such as brandy or port wine,

had generally to be given, and in such debilitated cases the diet had necessarily to be bland, nourishing, and readily assimilable; it consisted of milk, milk and eggs, meat essences, milk puddings, and light soups. Convalescence in these cases was prolonged, and return to normal dietary had to be carefully regulated.

Case 5.

Dhooly bearer, admitted on August 6th, 1917, with diarrhoea and debility, and a history of several weeks of ill health, abdominal pain, and the passing of mucus with the stools. He was passing from sixteen to twenty stools daily, was very weak and emaciated, and could scarcely articulate. He had continued on duty till forced by weakness to seek medical aid. Liver and spleen not palpable. Temperature 99° to 100°. Pulse very rapid and weak. Tongue furred, dry, and protruded with difficulty. Lungs showed poor air entry and signs of old pleurisy. He was at first considered to be a case of phthisis, with diarrhoea, but no tubercle bacilli could be detected in the sputum. Blood was negative as regards malaria. Examination of stools showed at first no amoebae, but on August 10th there was a little blood and mucus in the stool, and amoebae were then found. He was at once put on emetine hypodermically, in doses of 1 grain daily, and on August 13th, when the symptoms had improved and his general condition was better, 2 grains of emetine and bismuth iodide were given in the evening to supplement the emetine. The former drug was well borne and caused no vomiting. By August 15th there was slight improvement, but the patient was still very weak and depressed, and was passing five or six stools a day. On August 17th he was much better, and there was no blood and mucus in the stools, and the emetine was discontinued. On August 19th the stools contained neither amoebae nor cysts, but the emetine and bismuth iodide was now given in 2 grain doses twice daily. The appetite had returned and the patient commenced to pick up. Medicinal treatment was stopped on September 1st, after a total of 9 grains of emetine and 40 grains of emetine and bismuth iodide had been given. A few days later the patient was transferred convalescent to another hospital.

This case is a very fair illustration of the action of emetine and bismuth iodide in severe amoebic dysentery in debilitated subjects.

No mention has been made of enemata, and, in fact, very little use was made of that method of treatment. In the milder cases it did not appear called for, and in the severe type, similar to that last described, it seemed to be a highly dangerous proceeding, considering the state of the bowel in these cases, as seen *post mortem*. Appendicostomy or caecostomy was not attempted, as the cases were too debilitated to stand operative interference, and the symptoms appeared to be relieved to a great extent by medication.

CONCLUSIONS.

Judging by the results in this small series of cases, it would seem:

1. That we have in emetine and bismuth iodide a combination of considerable potency in the treatment of amoebic dysentery, particularly when the amoebae are assuming their resistant stage. When given in pill form in doses not exceeding 2 grains its emetic effects are slight, at all events in Indian cases. Its use in conjunction with hypodermic injections of emetine hydrochloride in acute amoebic dysentery would seem to be beneficial, in that convalescence is established earlier, and patients are less likely to become "carriers." It cannot be considered in the light of a substitute for emetine, as attempts to treat acute cases with it alone ended in failure, until emetine was used in addition.

2. In "carriers," and in those convalescents who continue to harbour cysts, emetine and bismuth iodide should prove superior to emetine, and it would seem a wise proceeding, from a public health point of view, to subject all cases of amoebic dysentery to a course of emetine and bismuth iodide during convalescence.

I wish to express my grateful thanks to Colonel W. H. Willcox, C.B., A.M.S., Consulting Physician to the Forces in Mesopotamia, for his kind and valuable advice and help in the treatment of the cases and the compilation of these notes, and also to my indefatigable assistant, Sub-Assistant-Surgeon Bashi Ram, without whose intelligent aid and knowledge of the vernacular the cases could not have been systematically treated or noted.

THE new edition of the *Practice of Medicine* by Sir Frederick Taylor, which is about to appear, will contain articles on trench fever, so-called soldier's heart, trench frostbite, and T.N.T. poisoning. The text has been subjected to thorough revision throughout and much new matter introduced.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE STERILIZING OF HYPODERMIC SYRINGES.

A Laboratory Note.

MOST of the hypodermic syringes now in use either have a glass barrel and metal piston, or are all glass. Nowadays, in addition to serum and vaccine injections, a number of drugs are used hypodermically, and the syringe is in very frequent demand.

The usual method of sterilizing is by boiling in a small steamer or saucepan. It takes a few minutes, and fine hypodermic needles soon become blocked by rust and their sharp points blunted; and, further, it must be remembered that the spores of some bacteria are not quite killed even by temperatures of 100° C. Disciples of Sir Almroth Wright use hot oil at a temperature between 130° and 140° C., which, besides being a more effective sterilizer than boiling in water, keeps syringe and needles in better working order. I am told that paraffin is better than olive oil.

In searching for a simpler and more convenient method I made tests with a compound consisting of lysol, ether, and methylated spirit:

Lysol	...	...	...	...	℥xv
Etheri sulph.	...	...	...	...	ʒij
Methylated spirit	...	...	...	ad	ʒj

Syringes of various sizes, 1 c.cm., 2 c.cm., 5 c.cm. and 20 c.cm., were filled with broth cultures of mixed bacteria, including staphylococci, *B. coli*, *B. proteus*, diphtheroids, and *B. subtilis*. They were then emptied, and each in turn sterilized by inserting the needles into the lysol-ether-alcohol mixture, and drawing it up into the syringe two or three times, care being taken that the mixture reached the whole interior surface of the barrel. The syringes were half filled with the fluid, and shaken up for a few seconds with the piston fully withdrawn, and the contents then returned to the bottle (for the same fluid will do over and over again until it becomes very turbid, and begins to choke the finer needles). After this procedure sterile glucose broth was drawn into each syringe, shaken up in it for five seconds, and then incubated for a week. In some of the earlier experiments in which the lysol content was below 1.5 per cent., it was found that though the 1 c.cm. and 2 c.cm. syringes were sterile, the 5 c.cm. and 20 c.cm. syringes yielded a few colonies of *B. subtilis* and *B. proteus*; lysol 3 per cent. appears to be rapidly effective. Ether was used as one of the diluents to enable the lysol more readily to penetrate oily or fatty particles which might have obtained access to the interior of the syringes, and alcohol to prevent rusting of the needles. I have used this method of sterilizing syringes several hundred times in giving hypodermic injections without a trace of inflammation at the site of puncture. An ounce bottle of this solution does not take up much room, or may be stowed away in the waistcoat pocket.

I have found it useful and thoroughly trustworthy for sterilizing the skin before taking blood from a vein for culture tests. Its penetration is superior to tincture of iodine, and it does not irritate delicate skins if it is only left on a very short time—for example, ten seconds. I then swab over the area with plain methylated spirit to prevent any chance of vesicating by the lysol. Surgeons therefore should find it useful in their emergency bags for rapidly sterilizing instruments, skin of patients, or their own finger-nails if without their aseptic kits and rubber gloves.

London, W. H. LYON SMITH.

NASAL OBSTRUCTION AS A CAUSE OF HUNGER.

THE following case presents certain features of interest. The patient, a man of 40, asked me if I could explain why he was always thinking about food, and was sometimes voraciously hungry without cause. On going carefully into his case I could find no abnormality beyond a deflected septum with narrowing of the left nostril. I relieved some of the blockage by painting the inside of the nose with a weak solution of cocaine. As soon as the passage was clear he said: "Now I can read my book; my mind no longer dwells on dinner." The voracious appetite usually came on at a meal, when he stooped over the

table reading a book, and was increased by eating. It was associated with swelling and redness of the nose, extreme restlessness, and a loss of brain power. I found that this train of symptoms never arose unless the left nostril was seriously blocked.

Some light seems to be thrown on the case by a passage from Purves Stewart's *Diagnosis of Nervous Diseases*, in which he says: "A certain amount of clinical evidence supports the view that there is a special cortical centre associated with the sensations of hunger and thirst. It would appear to be in the temporal lobe at or near the olfactory centre." With regard to the constant "dreamy" feeling complained of by the patient, I found in the same work: "Disease of the tip of the temporal lobe causes a sudden subjective sensation of smell or taste (often associated with a characteristic 'dreamy' mental state)."

I found no evidence of disease of the temporal lobe in my patient. He refused operation for the deflected septum, but I cured him of his attacks of acute blocking by getting him to exercise his alae nasi muscles. A week's exercise in front of the glass gave him well arched nostrils with disappearance of the subjective symptoms, particularly the dreamy mental state.

CHARLES J. HILL AITKEN, M.D.

THE PHENOMENA OF PURULENT BRONCHITIS.

A SUSPICION arises that many cases which we have hitherto classed as pneumonia of a peribronchial type were really instances of purulent bronchitis. These patients had a very rapid pulse, exceedingly frequent respiration, painful whistling cough, high temperature, headache, profuse expectoration, sometimes purulent, sometimes prune-juice-like. They—or at least the worst of them—had a heavy heliotrope hue of the lips and even of the face. The clinical signs of pulmonary consolidation were indeed sometimes wanting, but the patients were so weak and distressed by movement that one hesitated to harass them by too frequent examinations, and the rapidity of pulse and respiration seemed to justify a diagnosis of pneumonia.

It is suggested that the lesion is really pneumococcal infection supervening on influenza, and that it is infectious. Post-influenzal pneumonia is so convenient and generally accepted a diagnosis that we are tempted to put the label on many doubtful cases, but I submit that the disease is due to a mixed infection—rather an acute pneumococcal septicaemia than a mere pneumonia following influenza. The cases which have been under my care were all of a mixed infection but not necessarily influenza. They were in patients who had had malaria, dysentery, or some form of sepsis. None of the fatal cases were very young. Their lungs were not absolutely free from solid patches, but the parts chiefly affected were the bronchioles, from which grey frothy pus exuded.

The affection is far more fatal than ordinary pneumonia, and the influenzal type is generally contagious, hence the necessity for early diagnosis and isolation treatment. Stimulants freely, with oil of wintergreen externally, and stimulating expectorants combined with nux vomica and gum resins seem to be useful.

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SYPHILIS INSONTIUM.

As an example how syphilis may be contracted through no fault of the patient, I wish to record the case of two officers who were attended by the same barber in the army somewhere in France. The barber had a sore on his hand which proved to be of syphilitic origin. Both officers developed a rash in due course, and the army doctor diagnosed secondary syphilis, confirmed by a positive Wassermann reaction. One of the officers became a patient of mine, and an independent Wassermann test was positive. I may add that the trouble in my patient's case started on his scalp as a sore.

N. WALMISLEY.

London, S.W.

THE French Government has issued an urgent appeal for the cultivation of the castor oil plant in all suitable localities. It is made not in the interests of pharmacy, but because castor oil is the best lubricant for air engines. The oil was formerly obtained chiefly from South America, but the amount imported is now small. The plant will grow in sheltered situations where it is not exposed to late frosts or rough winds. It is raised from seed, the seedlings being set out about two yards apart.

Reviews.

OBSERVATION AND COMPILATION IN SURGERY.

THE accidents of transport in these days bring together for review two books which present a striking contrast that may perhaps be considered typical of much. The one is a sound piece of clinical observation and deduction, the other a compilation demonstrating once more by its very pretentiousness the German professor's incapacity, when left to his own resources, of throwing any useful light on new problems.

Criticism of the volume on the peritoneum in war surgery,[1] by MM. STASSEN and J. VONCKEN, is disarmed by a foreword of the authors, who wrote in an advanced hospital on the Yser, far from books and without opportunity for laboratory research. But, indeed, the essay calls not for criticism; assuredly not from those who in like circumstances have painfully learnt similar lessons without, maybe, the industry to make a faithful record of their errors and misfortunes, or the candour to describe the tragic steps leading to a settled policy in the face of abdominal wounds. Here we find, well documented by case records, an account of the "false abdomen," the "doubtful case," the extraperitoneal visceral lesion, the parenchymatous-organ solus, the hollow viscus injury, the haematoma, infection. We follow the authors in their recognition of peritonism, simulating true intraperitoneal wound so closely as to be differentiated in the end only by the absence of some one—any one—of all the signs present together in the latter; of genuine wounds devoid of symptoms; of the necessity for sending to the special hospital every wound that *might* by any chance lead to the abdomen, and especially all those of the upper part of the thighs and the buttocks. We find them at last coming to the decision that in every case the wound should be excised in such a way that the track can be followed right to the peritoneum—and further if need be. To those going fresh to work in a casualty clearing station we commend the study of this book from cover to cover; there is hardly a page which does not disclose an experience or an observation that must be familiar to those who have operated in an advanced abdominal centre, and few, we think, who, even if they do not always agree with the authors, will not admit that these Belgian surgeons have fulfilled their hope and written "*un livre de bonne foy.*"

A textbook of war surgery,[2] a thousand pages long, written by a score or more of the best-known German surgeons, and published after two years of war experience, should prove of great interest, but it does not. Is it that the Censor has cut out all the epoch-making discoveries of Teuton surgeons lest the enemy should profit? or can it be that Teuton surgery has made no extraordinary contributions to the solution of problems common to them and to us? In favour of the former hypothesis there is a notable absence of any reference to a prophylactic for gas gangrene, though there has been some reason, in the greater resistance of the Boche, wounded in like conditions with our own men, to infer or surmise its existence. Be that as it may, the deeper one plunges into this volume the clumsier it appears—clumsy in arrangement, clumsy in attitude of mind, clumsy in treatment. There is little or nothing here to be extracted for the instruction of our M.O.'s in the field or the betterment of their methods. If we turn to any chapter at hazard we find this. The section on the abdomen is from the pen of Schmieden himself, and it is full of good clinical observation, by no means lacking in descriptive power, but it smacks of Halle, not of the front. The real problems of gut injuries through the buttock, the back, the thorax, receive no proportionate share of attention, and the details of technique, from the author of a textbook of operative surgery, are meagre. It is the same with the chest, with the head, with other regions. Fresh from dealing with such work behind the lines one seeks guidance on knotty points, only to be disappointed. Take, again, the question of fractures of the femur; assuredly the British army has nothing to

[1] *Le péritoine en chirurgie de guerre: Etude clinique.* By MM. Stassen et J. Voncken. Paris: Baillière et Fils. 1917. (Roy. 8vo, pp. 160.)

[2] *Lehrbuch der Kriegs-Chirurgie* Edited by A. Borchard and V. Schmieden. Leipzig: Johann Ambrosius Barth. 1917. (Roy. 8vo, pp. 988; 5 plates, 429 figures.)

learn if this be German practice. There is nothing really whole-hearted about excision of the wound—nothing to match Sinclair-type methods for securing extension—instead, a final reliance on plaster-of-Paris. No bipp, no flavine, no brilliant green, no chloramine-T, and the Carrel-Dakin method ill understood and discredited. Does one look at the section on the jaws and face, there are at least half a dozen men in the British service who could write a better account of better methods, and expose the whole of their personal results to put the matter to the test. The book is comprehensive, and as a storehouse of the past has a certain value, until a French or British text-book appears. Finally, we cannot but think the illustrations a pain and grief to the soul of Johann Ambrosius Barth—we are sorry, for to him every one is indebted.

BLOOD PRESSURE.

STUDENTS of sphygmomanometry will welcome the appearance of a second edition of Dr. FAUGHT'S *Blood Pressure*.[3] It is a comprehensive work; the author has embodied a summary of all the recently published literature dealing with his subject, and has, in addition, given the results of his own research and clinical experience.

The first ten chapters are devoted to physiology. The variations of blood pressure in health, due to such factors as age, posture, exercise, altitude, etc., are fully discussed. In considering posture stress is laid on the fact that pressure is decreased on standing, not raised, as is often stated. The second part of the book deals with abnormal pressures and their significance in conditions ranging from Addison's disease to aviation sickness. Of especial interest are the chapters on hyperpiesis, arterio-sclerosis, and nephritic hypertension. The author insists on the fact, often overlooked, that in certain individuals high tension is a physiological necessity, and is Nature's method of compensation for loss of renal function. Lowering such a pressure will lead to renal insufficiency and must be carefully avoided. It is unfortunate that, in dealing with nephritis, Dr. Faught has treated the various chronic forms of the disease as one group; and his conclusions, drawn from a mixture of cases, are at times decidedly confusing. This disadvantage is, however, compensated by the large amount of valuable information given. Space is devoted to blood pressure in relation to surgery, obstetrics, and anaesthetics. The question of the advisability of operation in patients with high tension is dealt with in a thoroughly sound and practical manner. His final chapters on the use of drugs, and the physical means for controlling blood pressure, will appeal to all who are called upon to treat difficult cases where arterial tension is at fault. Throughout the volume stress is laid on the importance of the regular estimation of blood pressure in nearly all medical and surgical disorders. The advice is good, and should be more generally followed, though we think it is perhaps an excess of zeal which advocates the sphymomanometer test in the diagnosis of asphyxia neonatorum.

The author's aim, to present in an easily accessible form the pith of medical literature bearing on blood pressure studies, has been achieved with eminent success. Nevertheless, the volume is one to be read with discrimination. As often as not no conclusion is drawn from the mass of evidence produced, and diametrically opposite statements frequently appear on the same page. It is evident that the reader must possess a sound knowledge of physiology and a wide experience of medicine if he would make good use of the mine of information placed at his disposal. The fault, if it be a fault, is one of the subject rather than of the writer, for lack of finality is inevitable in the present state of knowledge. But the immense value of such a survey to anyone about to undertake a study of blood pressure is easily realized, and the book will appeal to all who are interested in this difficult and complicated subject.

THE MENTAL DISORDERS OF WAR.

WHATEVER the effect of the war on the numbers of the insane—and so far there does not seem to be evidence that it has increased the total under care in Great Britain—there is no doubt that it has raised some new problems, and that some of these have come under the notice of members of the profession who would not in the ordinary way have sought out such cases. We may be grateful, therefore, to Professor JEAN LÉPINE[4] of Lyons for writing a handbook (in the Collection Horizon) which is intended not to express final opinions but to serve as a guide to medical officers at the front, and especially to those who have had little or no training in psychological medicine. The circumstances of service in the field react on the mind in so many ways and so differently from the influences of peace that new forms of mental disorder may result; but, in addition, they may revive or colour pre-existing disturbances. The repetition of nervous stimuli may lead to a state that may be called psychological anaphylaxis. From analysis of six thousand cases Professor Lépine draws the conclusion that alcoholism was the sole cause in more than a third and played some part in more than half.

Discussion of the numerous acute disorders occupies about half the volume. They are considered in various groups and subdivisions, which are admittedly somewhat artificial. In contrast to the works of German and Russian writers hysterical psychoses receive little attention, at least under that title, and are included under the manifestations of the confusional states. The onset of acute mental confusion is seldom acute, though it may be thought to be so when the prodromal stage has been overlooked. Emotional experiences are the sole or main causes, and thus take the etiological place occupied by toxic or infective agencies in time of peace. A description is given of cases of acute encephalitis of obscure origin with paralysis, which may be extensive, and mental symptoms resembling Korsakoff's polyneuritic psychosis. After reference to the mental sequels of enteric fever attention is drawn to fits, mania, melancholia, and various trophoneurotic manifestations after antityphoid inoculation.

The chronic mental disorders being commonly antecedent to the war and less responsive to treatment receive less attention than the acute derangements. Simulation of mental disease is, Professor Lépine says, extremely rare, both because it is difficult and because its success would result in confinement and not in return to a free civilian life. On the other hand, there is considerable risk that the manifestations of mental disease, such as dementia praecox and general paralysis, may be misunderstood and punished by the commanding officers as breaches of discipline. The concluding part of the book is devoted to an explanation of administrative details concerning soldiers with mental disorders.

POPULAR WORKS ON THE PHYSIOLOGY OF NUTRITION.

MEDICAL men are frequently asked by educated patients to suggest the names of books which treat intelligibly of this subject, upon which so much attention is now concentrated. The standard general treatises are not easy reading for the layman. Different aspects of the food problem have been excellently handled by such writers as Professors Hopkins, Wood, Hill, Dr. Spriggs, and Sir William Thompson, but there is still room for two new books addressed to the general public. *An Adequate Diet*,[5] by Professor PERCY STILES of Harvard, is clearly written, but is perhaps a little too concise, and the author might with advantage have illustrated his arguments more frequently by examples. Professor BAYLISS, in *The Physiology of Food and Economy in Diet*,[6] has provided a book which can be unreservedly commended. The general physiological principles of dietetics are lucidly explained, the advantages and disadvantages of specific foods are set out, the vexed question of alcohol and its use is handled judiciously, while all the general reader needs to know about vitamines is provided. The food situation changes so rapidly that practical suggestions as to diets necessarily become obsolete soon after they are made, while statistical data of consumption have accumulated during the last few months. Much of the information

[3] *Blood Pressure from the Clinical Standpoint.* By Francis Ashley Faught, M.D. Second edition. Philadelphia and London: W. B. Saunders Co. 1916. (Med. 8vo, pp. 478. 15s. net.)

[4] *Troubles mentaux de guerre.* By Jean Lépine, Professeur de Clinique des Maladies Nerveuses et Mentales a l'Université de Lyon. Collection Horizon. Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie. 1917. (Cr. 8vo, pp. 200. Fr. 4.)

[5] Cambridge: Harvard University Press. 1916. (Feap. 8vo, pp. 51. 2s. 6d. net.)

[6] London: Longmans, Green and Co. 1917. (Cr. 8vo, pp. 107. 2s. net.)

published in our own columns was not available when Professor Bayliss wrote, but none of it invalidates his arguments and much of it strengthens them. There are a few points upon which some difference of opinion is permissible, but none of them are of sufficient importance to need comment, and we believe that the book is one which, if widely circulated, will do great good at the present time.

NOTES ON BOOKS.

THE first set of English translations of the Collection Horizon has been completed by the publication of the translation of the book on *Dysentery, Asiatic Cholera, and Typhus Fever*,[7] by VINCENT and MURATET. It is edited by Dr. G. C. LOW. Dr. ANDREW BALFOUR, C.M.G., says in a short introduction that, leaving the Western front out of count but taking all the other war areas together, there can be no doubt that dysentery has been the most common of the communicable diseases. At Gallipoli it was extremely prevalent, and accounted for a great deal of the sickness and invaliding which so seriously interfered with military operations. In all the war areas, Dr. Balfour says, the bacillary form has been much more frequent than the amoebic, which accounted for only about 20 per cent. of the whole number of cases. Cholera and typhus have both been kept under control; the native labour corps in Egypt have suffered from typhus fever, but the immunity of the British forces, in spite of the great prevalence of lice, is held to be evidence of the efficiency of the measures taken for disinfection and for "delousing" not only the troops, but the prisoners taken in action. The book is valuable to medical officers, inasmuch as it deals very fully with prevention, diagnosis, and treatment. It is less complete in its handling of pathology and bacteriology.

Lieut.-Colonel W. J. BUCHANAN, I.M.S., C.I.E., has contributed to *Bengal, Past and Present*, an account of his own journeyings through Sikkim and Nepal in the footsteps of Sir J. D. Hooker, as a centenary tribute to that great naturalist, who was born in 1817. J. D. Hooker was the son of Sir W. J. Hooker, Director of Kew Gardens, was educated at the University of Glasgow (M.D. 1839), joined, like Huxley, the Medical Department of the Royal Navy, and went with Ross to the Antarctic when 22 years of age; he returned four years later, and went to India when 30. His first journey among the great mountains was made in 1848, his last and greatest in the following year. Colonel Buchanan, who has himself wandered much in Sikkim, traces Hooker's routes, and provides many notes and explanations. The paper is illustrated by two photographs of the Mt. Everest-Makalu group and of Kinchenjunga, which, even after reproduction and crushing in the post, are very fine. They may make those in populous city pent think that the chance now and again "to breathe the air of Sikkim free" is some compensation for eastern exile. The beauty of the views from Darjeeling is legendary, and Mr. Burlington Smith's diagram of the snow peaks seen from there helps the untravelled imagination to an understanding of what must be the most glorious mountain prospect in the world.

The New Hazell Annual and Almanack[8] for the year 1918, by T. A. INGRAM, M.A., LL.D., is, like preceding issues, intended to provide the information with regard to all the countries of the world, and on topics of the day, which is likely to be looked for in such a work. It contains, for example, lists of members of the Houses of Lords and Commons, of orders of knighthood, and a detailed directory to the Civil Service, lists of societies and institutions, statistics of the British Empire and foreign countries, and a section on agriculture and the world's crops; it contains also a special section on Home Rule for Ireland, and a medical review for 1917, giving a number of abstracts from the medical literature of 1917; these seem to have been judiciously selected, but references are given or omitted in a rather capricious manner. The article on the navy and army is of value, as giving particulars of the various departments of the Admiralty and the War Office; it is illustrated by diagrams of some of the badges of rank in the Royal Navy, the British army, and the United States army. The concluding part of the volume contains a detailed review of the war, preceded by a summary of events, and followed by an article on the financial aspects of the war, and lists of commissions and committees appointed to consider questions arising out of it. The volume, which is supplied with an excellent index, has been carefully adapted to its purpose.

[7] *Dysentery, Asiatic Cholera, and Exanthematic Typhus.* By H. Vincent and L. Muratet. With an introduction by Andrew Balfour, C.M.G., M.D., Lieut.-Colonel R.A.M.C. Edited by G. C. Low, M.A., M.D. London: University of London Press. (Cr. 8vo, pp. 227. 6s.)

[8] London: Henry Frowde, and Hodder and Stoughton. 1918. Thirty-third year of issue. (Crown 8vo, pp. 920 + lii. 5s.)

MEDICINAL AND DIETETIC PREPARATIONS.

Scopolamine Hydrobromide.

IN view of the increasing application of scopolamine-morphine narcosis, Burroughs, Wellcome, and Co. have added to their list two strengths of pure scopolamine hydrobromide in 0.5 c.cm. sterile solution. The dose of medicament in sterile solution is contained in a hermetically sealed glass phial, which is opened when required for use, and its contents drawn into the syringe. The new strengths are those usually employed, gr. $\frac{1}{150}$, as an initial injection, and gr. $\frac{1}{100}$ for subsequent use. They are issued each in boxes of ten phials.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee, held on Tuesday, January 8th, fifteen cases were considered, and £154 voted to fourteen of the applicants. The following is a summary of some of the cases relieved:

Daughters, aged 76 and 71, of M.D.Lond., F.R.C.S.Eng., who practised at Rochester and died in 1855. Joint income from pensions £90 a year. Present cause of distress due to death of brother who used to help them. They pay 15s. 6d. a week for rent. Owing to high cost of living, unable to manage. Voted £18 in twelve instalments.

Widow, aged 36, of M.R.C.S.Eng. who practised in Liverpool and died in 1914. Left entirely without means, with one daughter, now aged 9, at St. Anne's School, Redhill. Applicant is a chronic invalid, and lives with her mother, who is unable to provide for her. Relieved three times, £36. Voted £12 in twelve instalments.

L.R.C.P.Edin., aged 60, widower, who practised at Old Kirkpatrick. Applicant is suffering from spastic paralysis and is unable to work. His son allows him £50 and he has a pension of £20 a year from another society. Pays £26 10s. for his rooms. Relieved thirteen times, £156. Voted £12 in twelve instalments.

Daughter, aged 51, of M.R.C.S.Eng. who practised in London and died in 1900. Applicant is a confirmed invalid. Only permanent income £6 a year from investments. The Guild allows 3s. 6d. a week. Relieved four times, £58. Voted £18 in twelve instalments.

Daughter, aged 65, of M.R.C.S.Eng. who practised at Watford and died in 1879. Applicant has a pension of £26 from the R.U.K.B.A. Used to earn a little by crochet work, but owing to failing eyesight is unable to continue this. Relieved eleven times, £126. Voted £9 in twelve instalments.

Daughter, aged 63, of M.B.Lond. who practised at Ladbroke Grove and died in 1881. Applicant is practically blind, and receives a pension of £20 from a society for the blind. Has a little help from friends. Relieved five times, £54. Voted £12 in twelve instalments.

Widow, aged 31, of L.R.C.P.Edin. who practised at Leeds and died in 1916. Income just over £100 a year. Has five children, aged 2 to 11 years. Owing to increased cost of food unable to manage. Relieved once, £10. Voted £10 in two instalments.

Widow, aged 47, of M.B.Glasg. who practised at Nottingham and died in 1914. Applicant left with two daughters, now aged 12 and 13, and very limited means. Earns a little by taking in paying guests, but wants help towards the education of the eldest daughter. Voted £10, and referred to the Guild.

Subscriptions may be sent to the Acting Honorary Treasurer, Dr. Samuel West, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is now called upon, as a result of the war, to deal with many widows and children who, in happier times, would not have thought of asking for assistance. It is glad to receive secondhand clothing and household linen. The class of clothes most wanted is that suitable for boys and girls working in offices, for women, and for old men. The gifts should be sent to the secretary of the Guild, 43, Bolsover Street, W.

DR. LEYVA speaks well of the value of injections of sodium persulphate as an adjuvant in the treatment of tetanus by antitetanic serum. He treated three cases in the American Hospital, Paris. The injections appeared to relieve the pain and spasmodic attacks so much that the patients begged for their repetition. The dose is 20 c.cm. repeated thrice a day of a 5 per cent. solution of the salt in sterilized distilled water. The solution must be freshly prepared and kept cold in a shaded place, as it is easily decomposed.

British Medical Journal.

SATURDAY, JANUARY 26TH, 1918.

THE LAW OF THE HEART.

The lectureship in physic at St. John's College, Cambridge, founded in 1526 by Thomas Linacre, remained an ordinary college lectureship until 1908, when, after the translation of the then holder, Sir Donald MacAlister, to Glasgow, the college authorities changed the terms of the lectureship and invited distinguished strangers, if this title may be applied to such well-known men as Sir William Osler and Dr. Norman Moore, to give an annual discourse.

Professor Starling's important Linacre Lecture on the Law of the Heart[1] gives an account of his recent researches, and thus differs from the restrospective essays of the two masters of medical history mentioned above. He discusses the mechanism by which the heart muscle adapts itself to the variations in the work imposed upon it by alterations in blood pressure. By means of an ingenious arrangement the isolated "heart-lung preparation" of a dog is provided with an artificial peripheral circulation in which all the mechanical conditions of the heart can be controlled. Two important conclusions are thus at once established: that, provided the inflow of blood remains constant, it is immaterial to the heart what blood pressure within physiological limits (44 to 200 mm. Hg) it has to contend with; and the more the blood pressure rises, the greater the quantity of blood that passes through the coronary arteries; in other words, the more work the heart has to do, the better its blood supply. The heart has a wonderful power of adjusting not only its output of mechanical energy, but also its total chemical changes, to the work occasioned by the mechanical conditions of the circulation. When as the result of exercise the heart receives a larger quantity of blood and has a higher blood pressure opposed to it, temporary dilatation with lengthening of the muscle fibres follows. The change in the muscle fibres brings more active surfaces into play, and this increase in the extent of active surface increases the energy of the heart muscle. At the same time more blood passes into the coronary arteries. The tone of the healthy heart is thus soon restored, and the organ returns to its normal volume, although it is doing more work. In a diseased or fatigued heart, on the other hand, the organ remains dilated during the whole period of increased work, and if the work be prolonged the dilatation may become permanent, and eventually cardiac failure may result.

The important deduction as to the connexion between the length of the muscle fibres and the energy of the heart's contraction justifies the labours of past physiologists on muscle-nerve preparations, the practical application of which was entirely obscure at the time, and in the lecturer's closing words shows that this, like every advance achieved in the quest of pure knowledge, will sooner or later play its part in the service of man.

[1] *The Linacre Lecture on the Law of the Heart.* Given at Cambridge, 1915, by Ernest H. Starling, M.D., D.Sc., F.R.C.P., F.R.S. London: Longmans, Green, and Co. 1918. (Pp. 27; 8 diagrams. 1s. 6d.)

DISCHARGED DISABLED MEN.

In France a Government department has been set up to supervise the re-education of men crippled by wounds. It has been placed under the direction of a senator, M. Astier. He takes a wide view of his duties. He recognizes that it is an obligation on the state to re-educate men when crippled in its service, and that the mere grant of a pension, however liberal, cannot suffice to restore them to their place in society. He recognizes also that France, rich as it is, cannot afford to do without the work in industries, agriculture, or commerce, of the thousands of men whose war wounds render them incapable of resuming their former occupations; recent French legislation, while it recognizes the obligation of the state to pension the wounded man and to re-educate him, distinctly places upon him the obligation of submitting to this re-education.

We are very much afraid that things are not going at all well in this respect in our own country. It is the custom to speak evil of the War Office, and it has recently been denounced in the House of Commons as soulless, but in this matter it has shown more sympathy and enterprise than the civilian department which takes over the crippled man when he is discharged from the army. The Military Orthopaedic Department of the army, though it has taken rather a long time to get established on a sufficiently broad basis, and though it is not yet fully equipped, is a very big and well conceived enterprise upon which the country may look with real satisfaction. Sir Alfred Keogh wisely called to his assistance Sir Robert Jones, who has been able to rally round him all that is most progressive in surgical thought in this country. As is clear from the address published in our columns a fortnight ago, Sir Robert Jones is not satisfied; he experiences a divine discontent, but, with the goodwill of the medical chiefs of the War Office and the loyal backing of his consultant colleagues, he has accomplished the greater part of his task, and will win through to complete success. Military orthopaedic centres already in existence cover the whole country fairly well, and in England, Wales, and Scotland there are special hospitals with their workshops and training schools for providing men who have lost limbs with artificial substitutes, and instructing them in their use. We are bound to say that the War Office has been brought to realize its duty towards soldiers crippled in the war. We say nothing of the Navy because the problem has not been so great for it, and, moreover, it has the knack of managing its own affairs. But we are bound to say also that the Ministry of Pensions is not yet doing all that it was hoped it would speedily accomplish for the crippled man discharged from the army. If it be asked why the Army Council allows a soldier to be discharged before he is restored to the best possible condition for earning his own living, the answer is that it is in accordance with the decision of Parliament, which laid it down that when it was established that surgery had done its best for the crippled man, and it was certain he could not be useful again in the army, he was to become the charge of the Ministry of Pensions. The Ministry has made rules and regulations, and it has issued a pamphlet for the use of disabled sailors and soldiers, telling them "how they are being rebuilt at the nation's cost." The motto of this pamphlet is the statement by Mr. Hodge, Minister of Pensions, that "our first principle is restoration," and it tells the men of the advantages of being medically treated and

specially trained. It asserts that if a man consents to let the Pensions Ministry try to cure him he will be well looked after. His pension while he is being cured free of cost is put upon the highest scale, and if he lives away from home his wife will get an allowance for herself and the children. It also says that it is most important that a man, after being cured, should be trained for a new job; but, so far as we can ascertain, its arrangements for the continued treatment and training of the men are at present inadequate—that is to say, it has not fully realized the importance of the medical and educational sides of the matter. It is true that a medical department has now been set up of which Sir John Collie has been appointed Director. We wish him success in his new office, but he has a difficult task, and is known to his profession mainly as the author of a book on malingering. The detection of malingering is one of the duties of the Ministry of Pensions, but we should have supposed that the continued treatment and education of crippled men after their discharge from the army was a far more important function, and we are not aware that the new Director of Medical Services for the Ministry of Pensions has hitherto given any special attention to orthopaedics or the re-education of crippled men.

This, however, is not the point of greatest consequence. The important point is that the Ministry of Pensions has not yet got into working order adequate arrangements for helping the men to become useful citizens. There is little evidence that it has any proper organization in contemplation. It has asked the help of the big general hospitals. They will no doubt readily consent to do what they can, but their resources are already very heavily engaged in attending to the needs of the civil population, and there is, we believe, scarcely one which has not set aside a proportion of its beds for wounded soldiers admitted direct from the Expeditionary Forces. We are not always of the opinion of Sterne, that they manage these things better in France, and we know that conditions are different in that country, where every man is by law a soldier and where it has long been recognised that the responsibilities of the individual and the state are reciprocal, but the principles are the same and M. Astier appears to have grasped them. The establishment of a medical department of the Ministry of Pensions is a sign of grace. We hope that early steps will be taken to develop the curative and educational sides of the work and that the Minister will place in a position of responsibility a surgeon with orthopaedic experience, who thoroughly understands the needs of the crippled men discharged from the army and the means by which they may be helped again to the highest possible state of efficiency.

MEDICAL PROBLEMS OF THE AIR SERVICE.

IN recent issues we have pointed out the supreme importance of setting up at once a properly organized and independent medical department of the new Air Force; we propose now to deal with particular aspects of the subject which illustrate and enforce our previous contentions.

In the first place, we may advert to the physiological problems of aviation. The response of the organism to massive alterations of barometric pressure has been the object of close study by physiologists ever since the epoch-making researches of Paul Bert, and it is generally known that the work of Haldane and his pupils, Boycott, Douglas, Poulton and others, together with that of Leonard Hill and his assistants, Macleod, Greenwood, Flack, and others, has provided a mass of information equal in value and superior in extent to that of the German investigators, who still seem popularly to be supposed in this country to have said the last word on all matters physiological. The result is that we possess in England a number of young physiologists who have acquired in the schools of Haldane and Hill a mastery of the special technique evolved by these distinguished investigators. Now the practical problems of high altitude aviation demand for their solution the application of the methods worked out by the physiologists, which cannot be so applied by persons not specially trained. Hence arises the necessity for a special physiological branch—not a mere side show, but an integral part of the service.

Another extremely important branch of physiological inquiry directly relevant to air work is concerned with the study of vision. All physiologists recognize those facts which gave rise to the numerous and conflicting theories of peripheral vision. The researches of Hering, Tschermak, v. Kries, Parinaud, MacDougall, and many others, have given us much information respecting the differing sensitivities to various stimuli of the foveal and extra-foveal retina. The Purkinje phenomenon is a familiar example, as is its development into the complex phases of so-called recurrent vision. The special responsiveness of the extra-foveal retina to stimuli of feeble intensity and its relation to the perception of moving stimuli render the activity of this part of the visual field extraordinarily important for estimating movement and for vision under feeble intensities of light. The rare but well-defined condition of night blindness exhibits the disadvantages of pure foveal vision to an extreme degree. It thus becomes of great practical importance that the vision of the flying man should be investigated by methods which, although precisely defined, are of so technical a character that they are not the possession of the average medical man, and are not even familiar to many whose knowledge of sight testing is above the average. Here again is a branch of pure physiology upon the utilization of which many lives and the fate of momentous military operations may depend. Its right utilization will not be possible without a proper physiological department in the air service. Very similar considerations apply also to the study of the borderland problems which lie between the spheres of the physiologist and the psychologist, but upon these we have not now space to enlarge.

Enough has been said to demonstrate that it is not sufficient to meet the needs indicated with vague phrases about encouraging science. Scientific men must be employed, not only as members of advisory committees—for experience, we regret to say, proves that their advice is frequently ignored—but as executive officers with proper status and powers of action. Finally, we call attention to the necessity of paying heed to another branch of applied science, that of medical statistics. The air service is still young enough to be manageable and old enough to have furnished valuable data, if only those data are intelligently treated. Men of different ages, physique, and avocations, have been recruited, and from their subsequent careers in the service, given an appropriate method of tabulation and analysis, the formulation of sound rules of future selection ought to be possible. It is to be remarked also that the interpretation of experimental results, and the decision whether such results can properly be made a basis for action, always involve some kind of statistical analysis

which can rarely be performed properly save by a statistician familiar both with the subject matter and with analytical methods. At present much useful material may be running to waste, and much useless material may be laboriously collected for want of a scientific man in control of the statistical organization. The notion that a medical statistician is a mere collector of returns and computer of percentages is as prevalent as the idea that a physiologist is a harmless crank devoted to the making of lines upon a smoked drum. Both these beliefs are false and dangerous; especially so in the air service; the method of dealing with the one delusion is equally applicable to the other. It is no longer thought strange that railway managers, coal owners, and multiple shopkeepers should blossom into generals, admirals, and super civil servants. But the conception that a man of science, as such, should be entrusted with executive responsibility is still a suspicious novelty. Thus our contemporary *Aeronautics*, in an otherwise excellent article, meets our plea that a seat on the Air Council ought to be filled by the head of the Air Medical Service, with the remark that it is not likely to find favour, "for several good and obvious reasons which it is unnecessary to enumerate." The "obvious" reason we have just stated; its merit is not obvious.

Of one thing we are sure: if the Air Ministry gives real power to men of science, not the lip service which has so long been their portion, this nation will surely establish a mastery in the air. If science is slighted and despised as heretofore, the new scheme will fail. In the eighteenth century, according to Commander Robinson's history of the fleet, we maintained our predominance by capturing the enemy's better models and then copying them. In these days we cannot hope to live upon the recognition of science by our enemies; we must use our own brains. The air service has an opportunity of beginning well; we hope the occasion will be seized.

DEFECTS IN THE LUNACY LAWS.

In our correspondence columns this week will be found a letter from the chairman and secretary of a select committee of the Medico-Psychological Association, appointed to resume the consideration of the points in which the existing lunacy laws require amendment. The letter asks medical men to furnish information of their experiences in the defects in the present system of lunacy law and administration, and to suggest legislative alterations they deem advisable. The need for amendment has been accentuated by the many cases of shell shock and other forms of mental derangement in its earlier stages arising out of the war, but reform has long been required in the interests of the civil population. The subject is one to which the British Medical Association has given attention for many years. It has taken an active part in promoting amending bills in the past, and will no doubt continue to show its readiness to work in co-operation with the Medico-Psychological Association. As has very frequently been pointed out in our columns at length, there has been for many years increasing dissatisfaction with the operation of the lunacy laws in England and Wales. Conceptions of mental disease have been changed, and if this country is to keep abreast of the times improvements in the legislation enacted nearly thirty years ago are necessary. The case for reform was very clearly and succinctly stated by Dr. Bedford Pierce in an address on the absence of proper facilities for the treatment of mental disorders in their early stages, delivered before the Yorkshire Branch of the British Medical Association when he was its President in 1915. The address was published in full in the BRITISH MEDICAL JOURNAL of January 8th, 1916, p. 41. Dr. Pierce recognized that the legal profession viewed with grave concern any interference with the liberty of the subject, but pointed out that the problem of the proper treatment of incipient insanity will not be solved until it is clearly recognized that there is no defined line between sanity and insanity. There is a rather vague intermediate zone, and those who enter this region urgently need the best treatment at the earliest possible date; the existence of this intermediate borderland state should, therefore, receive legal recognition. The need for establishing separate clinics in close alliance with the clinics for other departments of medicine is now generally recognized, and as part of them there should be accommodation available for cases that need in-patient treatment. There is no provision for borderland mental cases among the poorer classes, and a move in the right direction would be to permit the admission of voluntary boarders to county and borough asylums, a provision at present confined to licensed houses and hospitals. In Scotland certain cases of temporary or unconfirmed insanity can be dealt with by notification without certification, a procedure which has not yet been adopted in this country.

MARGARINE.

MARGARINE is a generic term for any butter substitute. The original product was made from animal fats, chiefly beef fat, but also mutton fat, lard oil, and horse fat. Nowadays the greater part of the cheaper margarines are made from vegetable oil, chiefly the cheap cocoanut oil expressed from copra, the fleshy portion of the seed of the cocoanut palm. Arachis (peanut) oil, is also used, as well as cotton-seed oil; in fact there is hardly an edible animal or vegetable fat procurable in large quantities at a cheap price which has not been used in the manufacture of margarine. The mode of manufacture is in all cases more or less similar. When beef fat is used it is taken fresh and placed in tanks at 80° F., then chilled and cut into small pieces, and raised again to 150° F. The clear oil is drawn off and allowed to set in vats. This is called "oleo-oil," and margarines made from it are sometimes called "oleo-oil margarines." Oleo-oil consists largely of olein. When the margarine is to be prepared, a quantity of skimmed milk is first pasteurized, then cooled, and run into souring tanks, where it is inoculated with lactic acid bacilli and the fermentation allowed to proceed until a degree of acidity is reached which causes rapid precipitation of curd; it is then poured into churns, the oleo-oil or the mixture of oleo-oil and vegetable oils, melted and strained, added, and an emulsion obtained by stirring. This emulsion is drawn off along a slanting board under a spray of ice-cold water, which causes immediate solidification, the mass being broken up into yellow granules. The granular mass, after draining, is matured at a constant temperature while the bacteria introduced by the milk develop; the product is then kneaded into a butter-like mass. To some extent the process of catalytic reduction, or so-called hydrogenation of oils is now carried out commercially; by this method many liquid oils can be rendered solid or semi-solid. These hydrogenated oils do not seem to be much used in this country for making margarine, but are apparently an important constituent of cheap lard substitutes. Early experiments with margarine, made chiefly with the oleo-oil or animal fats, seemed to indicate that a good margarine was of the same relative nutritive value as butter, but there is now reason to conclude that the vegetable margarines may be deficient in the accessory growth substances or vitamines. The presence of growth-promoting accessory substance in association with certain naturally occurring fats was first described by McCollum and Davis, and Osborne and Mendel, and investigation has shown its existence in butter, egg yolk, cod-liver oil, the lower melting point fractions of beef fat and kidney fat. It is

apparently absent from the majority of oils of vegetable origin. The only animal fat as yet found entirely deficient in it is lard. Halliburton and Drummond[1] have recently concluded a very careful research on the nutritive value of margarines and butter substitutes with reference to their content of the fat-soluble accessory growth substance. Confirming and extending previous experiments by McCollum, Hopkins, and others, they found that rats fed upon dietaries in which animal fat margarine was the sole fat and the sole source of the fat-soluble accessory substance, completed their life-circle normally, whereas rats receiving instead vegetable-oil margarines showed a more or less subnormal rate of growth for a short period, and then, sooner or later, the characteristic decline associated with a deficiency of the fat-soluble accessory substance. When the animal margarine was restored to the diet, growth at the normal rate was resumed. The conclusion of Halliburton and Drummond is that the oleo-oil margarines are in this respect nutritively the equivalent of butter, but that cocoanut oil, cotton-seed oil, arachis (peanut) oil, and hydrogenated vegetable oils contain little or none of the accessory substance, so that margarine prepared with a basis of these fats has not a nutritive value equal to that of butter. Lard substitutes prepared from vegetable oils are equal to lard in their nutritive value, both alike being destitute of the fat soluble accessory substance. The best natural sources of the fat-soluble accessory substances are milk, butter, and eggs, but these have risen in cost, and butter has become very difficult to obtain. There is, therefore, a danger that unless steps are taken to ensure a better milk supply for children they may run some risk of being fed, so far as fat is concerned, entirely upon vegetable-oil margarines, destitute of the growth-promoting accessory substance. The chemical nature of this substance has not been ascertained; it is apparently easily extracted by alcohol, but not invariably by ether. It has been suggested that it is a lipoid and that in plant cells it is held in some form of chemical union, which is broken down during the assimilation of the plant foodstuff by the animal. Some recent attempts to isolate from the small bean, katjang hidjoe (*Phaseolus radiatus*), the substance which gives it its power of curing beri-beri and polyneuritis gallinarum, have been reported by Dr. Hulshoff Pol.[2] They were conducted in Java and at Utrecht. The bean has a great reputation in the treatment of beri-beri and Dr. Pol has used it with success for the cure of that disease. He first made a decoction of the beans and after purifying it administered the fluid to four out of a number of beri-beri patients. These four patients recovered; the others who did not receive the decoction got worse and it became necessary to give them the bean in the ordinary way. The decoction contains an acid principle which yields crystals on evaporation. The chemical constitution of this acid body has not been determined, but there seems little room to doubt its efficacy as a cure for polyneuritis gallinarum.

[1] *Journal of Physiology*, vol. li, p. 235.

THE FOOD MINIMUM.

TEN public lectures on some biological problems of to-day are being delivered at University College, London, on successive Monday afternoons. The first, by Professor W. M. Bayliss, F.R.S., on January 21st, dealt in a general way with the food question. He took the daily requirement of a man engaged in moderate muscular work as an amount of food which would yield 3,300 calories; of the sedentary worker 2,500 calories; 1,700 calories was the minimum, and to go below this involved actual loss of body substance. The value of the articles rationed by the Food Controller at present was little more than the bare amount necessary for subsistence, and accordingly, if a person was to do even a moderate amount of work, he must supplement his diet to the extent of some 1,400 calories from unrationed articles. This was a large proportion of the whole, although the unrationed articles included potatoes, fish, and peas and beans. No one would object to living on the smallest practicable diet if necessary, but official statements as to the degree of real shortage were contradictory. If the next three or four months were likely, from the military point of view, to be the most critical in the war, Professor Bayliss suggested that it might be worth while, in order to help every individual to work at maximum pitch, to arrange for a sufficient diet to cover that period, and risk a moderate shortage afterwards. In any case, he agreed with Dr. Leonard Hill that there was a great deal to be said for allowing bread to be completely unrationed and letting other things take care of themselves. From inquiries based on the experience of a number of middle-class families, he had reason to think that the pre-war figure of 4,400 calories given by Hopkins and Wood included an undue proportion of waste in the kitchen, with the consequence that although much smaller quantities of food were now purchased, the people themselves were not sensible of a corresponding shortage in actual consumption owing to greater economy in preparation. It was a part of food economy to keep warm. It had been suggested that in the case of a person who was not obliged to take muscular exercise such exercise should be avoided as it was a waste of energy, and resulted in increased food consumption; but muscular exercise produced heat, and therefore, within limits, it served the purpose of keeping up the body temperature. He had been unable to find any definite evidence for the view that a given weight of protein was more effective for the production of energy than a similar calorie value in fat or carbohydrate. So far as the healthy individual was concerned, protein as a source of energy had no value over any other form of food. Cocoa-butter (consisting of the fat removed from the cocoa bean in the preparation of chocolate) might, he thought, be a substitute for dairy butter, at least for cooking; for table use its chocolate taste might be objectionable, but it was an excellent fat.

DISSEMINATED SCLEROSIS.

IT is said that after locomotor ataxy disseminated sclerosis is the next commonest nervous disease. Very little is known about its etiology, and it has been looked upon as a primary degeneration. Clinically, however, it presents many signs of a specific infection. The first attack is sometimes a very acute illness, and the recurrences suggest the revival of a latent infection. The anatomical lesions in cases which have run an acute course, consisting of inflammatory and exudative changes in the walls of small blood vessels throughout the central nervous system, are very suggestive of infection. These inflammatory changes are, moreover, present in areas where glia is poorly developed, which is against the idea that a primary degenerative change in the glia is the foundation of the pathological anatomy of the disease. Various workers, including Jürgens, Siemerling and Raecke, and Bullock, have attempted to transmit the disease from man to animals without result. Steiner, just before the outbreak of the war, was able to produce in a rabbit by inoculation of cerebro-spinal fluid from an acute human case, a disease with marked nervous symptoms, which ended fatally about six weeks after inoculation. Since then further experiments have been carried out, the blood and cerebro-spinal fluid from acutely developing human cases being used for inoculation.[1] Guinea-pigs, rabbits, mice, and one monkey have been the subjects of the tests, and the inoculations were made intraperitoneally, intracardially, and intra-ocularly. The authors describe interesting results in guinea-pigs after intraperitoneal injections of cerebro-spinal fluid, and in rabbits after intraocular inoculations. Control experiments with the blood and cerebro-spinal fluid of patients suffering from other diseases, and of

[1] P. Kuhn and G. Steiner, *Med. Klin.*, September 23rd, 1917, p. 1307.

healthy persons, were completely negative. In the guinea-pig the disease may develop and end fatally at periods varying from three days to twelve weeks. The symptoms all point to involvement of the central nervous system. The animal sits humped up, moves about with difficulty, and finally becomes paralysed in the limbs. Death ensues as a rule within about nine hours after the onset of paralysis. In rabbits the symptoms are at first not referable to the nervous system. The animal becomes thin, and its fur dry; later a severe illness sets in suddenly, and ends in paralysis and death. No macroscopic changes have been observed in the experimental animals *post mortem*, and the histological changes have not yet been worked out. Cultures from the blood and from the organs of the animal were one and all sterile. In films of blood both from the guinea-pigs and rabbits, which died with paralytic symptoms, the authors were able to recognize spirochaetes. The methods used were dark-ground illumination, Giemsa's stain, and Loeffler's stain. In only one case were spirochaetes found in the animals by Levaditi's silver method, and then only in the liver. The spirochaetes are described as morphologically very similar to those of spirochaetal jaundice. Under dark-ground illumination they are very actively motile. Further work on the subject is stated to be in progress.

RADIUM IN CANCER.

THE larger number of reports on radium treatment and its results which have been published have been mainly statistical. Dealing with the cases seen during the course of a single year, and with the general methods of radium application, they finish with a short record of the diseases treated and with the results obtained. From the point of view of affording assistance to other workers in the consideration of the actual treatment to be carried out in individual cases, these reports have been, generally speaking, insufficient as accurate guides. In the first report of *Radium Therapy in Cancer*[1] at the Memorial Hospital, New York, by Janeway, Barringer, and Failla, the authors have been at pains to put on record their work in such a manner that it could be used for reference by others, and so that a reader can duplicate the method, or obtain the necessary information to guide him in his own work. The first part deals with the physical considerations relative to the application of radium, and in the course of fifty pages discusses, amongst other things, the various physical and chemical actions, the applicators used, and the value of the radiations from typical applicators. Whilst containing nothing new, it gives in concise and practical form all the information a medical man requires in order that he may approach the actual treatment of cases in a scientific manner. Janeway is responsible for the main portion of the report, which deals with the principles and methods of the application of radium to cancer. It is based on the observation of 424 cases of malignant tumours treated during a period of two years. There are no photographic reproductions of the cases, but a short and concise description is given, together with the exact nature and dates of the radium treatments, and the results, immediate and remote, are described. Similar cases are grouped together, and the observations and results with each group are summarized. The whole constitutes a valuable record of careful and systematic work, and the arrangement is such that the reader is able to obtain information and facts very easily. A short section upon the radium treatment of bladder and prostatic carcinoma by Barringer is based on 25 bladder and 30 prostate cases. A few of these are recorded in the same way as the others, and the opinion is expressed that radium can do as much as surgery for bladder carcinoma without subjecting the patient to the danger and discomfort of a major operation.

[1] *Radium Therapy in Cancer at the Memorial Hospital, New York.* (First Report, 1915–16.) By Henry H. Janeway, M.D., Benjamin S. Barringer, M.D., and G. Failla. New York: Paul B. Hoeber. 1917. (Med. 8vo, pp 242; 18 figures.)

THE SANATORIUM TREATMENT OF TUBERCULOSIS.

THE city of Birmingham, like other large towns, has to bear a heavy burden of tuberculosis. The measures which the municipality have adopted to deal with it and the progress made during the past year are set forth in a long report by the tuberculosis officer, Dr. G. B. Dixon, with supplementary reports from the superintendents of the hospitals and sanatoriums included in the scheme. It is satisfactory to note that an attempt has been made to separate the advanced from the more curable cases, but complete success has not yet been attained in this respect. In Birmingham, as elsewhere, the demand for sanatorium treatment considerably exceeds the supply of accommodation, and many beds, primarily intended for first-stage cases, have to be given up to patients for whom there is no real hope of recovery, many of them being Poor Law cases. Dr. Dixon points out very clearly the difficulty which attends the classification of early cases, some of which, without any marked physical signs of disease, may go rapidly downhill, while others with well-established evidence of destruction of lung may make a good recovery. Doubtless this is true of a small proportion of cases, but in the vast majority of instances the cases which can be restored to permanent working capacity are those in which the actual pulmonary lesion is still only slight. Restoration to working capacity for a few months or years is of little value to the community, and experience proves that it can be attained in the chest hospitals as well as in the sanatoriums. Hence it would be more gratifying if the Birmingham method could be carried out in its entirety and the sanatoriums strictly reserved for the treatment of cases which exhibit substantial evidence of curability. Almost every aspect of the subject is dealt with in the report, except the durability of working capacity; it is only compared as before and after treatment. The dangers of family infection are shown diagrammatically, which serves to confirm the fact observed in other large centres that the presence of near relatives affected with tuberculosis is the main danger; the figures point unmistakably to the overcrowded bedroom as the probable scene of infection. A very large number of tuberculous children have to be dealt with in the Birmingham area, and the arrangements made for combining treatment with preliminary education are excellent. Working from an antituberculosis centre in the town, the investigation of notified cases and contacts is carried on very thoroughly and there are five institutions set apart for the reception of selected cases. Every effort is made to re-examine cases after a period of treatment in these hospitals and sanatoriums and to keep in touch with them later on, but the inevitable shortage of skilled observers greatly hampers this part of the work. The high percentage of disappearances of bacilli, even in third-stage cases, is remarkable and contrasts strongly with observations made upon this point in some other sanatoriums, especially in face of the fact that many examinations of sputum were made several months after the patients had returned to their normal round of life. Very close supervision is maintained over the milk supply, and all cows reacting to tests are eliminated, although apparently in perfect health. The high case-incidence among children would seem to show that in spite of all these precautions the insidious encroachments of the bacillus have not been checked. The ever-present danger to young children is emphasized also in a report from Belfast to which we lately referred.[1] In that city there has been a remarkable tendency to glandular tubercle, and the same thing has been noted in other large towns as occurring during 1916. Examination of contacts proved the presence of a great deal of latent disease for which no medical aid was sought, and indicated very clearly the need for more complete domiciliary investigation and treatment. Too often, for lack of early recognition, the disease gets the upper hand and advances to the incurable stage before the need for medical help is thought of.

[1] BRITISH MEDICAL JOURNAL, November 10th, 1917.

THE WISE USE OF MEDICAL MAN POWER.

IN an article upon this subject last week we stated that it was hoped that it might prove possible to avoid further calls upon the civil profession to supply more medical officers for the army, but that the calls from the Royal Navy might become more insistent. It appears that this statement without qualifications has been misunderstood. Its truth was contingent upon the army obtaining all the newly qualified medical men on a principle of equitable adjustment with the Royal Navy. This, it was thought, would be understood, because the claim of the medical services of the armed forces on newly qualified men is so generally recognized that it did not seem necessary to reiterate this point. It seemed probable that from this source the actual wastage of the medical services by invaliding, owing to wounds or sickness, would be met. But the statement was made subject to another contingency which ought to have been specified—namely, that the number of temporary officers R.A.M.C. relinquishing their commissions at the end of the period for which their contracts run and the number of demobilizations did not increase. Should any such increase occur on a large scale the balance will of course be disturbed, and what steps should be taken in that event will become a serious matter for consideration between the professional committees, the Ministry of National Service, and the medical services of the Royal Navy and of the army. The question of medical man power was mentioned during the discussion of the quarterly report of the Central Medical War Committee at the meeting of the Council of the British Medical Association on January 23rd. It was decided that a communication should be sent to the Minister of National Service urging the need for publication of the findings of the Committee of Inquiry which visited France last September to inquire into various matters connected with the personnel and administration of the Army Medical Service in that country, and the importance also of ensuring that any recommendations made by that Committee with a view to economy of medical man power shall be carried into effect.

Medical Notes in Parliament.

Abolition of Boards of Guardians Recommended.

(From Our Parliamentary Correspondent.)

MUCH interest attaches to a report which has just been presented to Dr. Addison, as Minister of Reconstruction, by a committee that has been considering questions of Poor Law reform. Far-reaching changes, involving the abolition of boards of guardians and the transfer of their functions to county and borough councils, are recommended. The Committee was appointed by the President of the Local Government Board, and not by the Reconstruction Minister as might be inferred from what has been said in the lay press. It is only because Dr. Addison gathers up from all the departments matters which concern reorganization after the war that he has the report under review. Sir Donald Maclean was made chairman of the Committee, whose membership included Lord George Hamilton and Mrs. Sidney Webb, the authors respectively of the majority and the minority reports of the Poor Law Commission appointed by the late Lord Salisbury when he was Prime Minister.

The Committee recommends the abolition of boards of guardians and the merging of all the functions of the Poor Law authorities in those of the county council and the county borough council, subject to certain modifications set out in schemes for London and the other administrative counties. After enumerating the many public authorities dispensing assistance out of the rates and taxes, the Committee states that its recommendations have been made for the further unification of services. The Committee has adopted for its guidance the principle of concentrating as far as possible on one local authority in each area the administration of all expenditure from public funds.

As regards matters more directly referred to it—by the Local Government Board—the Committee recommends that the care of the sick and infirm, including maternity and infancy, and the aged (who need institutional care) should pass to the county or borough councils according to area; and that the provision for children able to attend school and for mentally deficient persons should similarly pass. In other words, it proposes *inter alia* that workhouses, Poor Law homes for children, and the care of mentally defectives should be transferred to the councils. The recommendation is to the effect that the workhouses, under another name, with the care of the mother and the young child, the sick and the old, should be put under the administration of the existing public health committees of the councils, which should be called Health Committees. It is recommended that the children of an age to attend school should come under the charge of the existing education committees of the councils; and that mentally defective persons and those of unsound mind uncertified should come under the charge of existing committees of the councils formed under certain Acts of Parliament.

For two other classes at present dealt with by boards of guardians it is proposed that two new committees should be set up by the councils. The first of these classes consists of the unemployed able-bodied, and it is recommended that the county or borough council should set up an unemployment and training committee, on the lines of the education committees, on which employers and trade unions should be represented. For dealing with the other class, including those who receive Poor Law out-relief, it is recommended that each of the councils should set up a home assistance committee. This committee would, besides taking up the administration of "outdoor" relief, as it is termed, deal with old age pensions, and it might possibly take up the provision of meals for school children, now made under an education Act; it might also deal with cases of discharged soldiers and their dependants requiring attention.

It is recommended that compensation should be given to officers (including medical officers and nurses) displaced or injuriously affected by the absorption of staffs. The proposal is that option as to transfer should be given both to the councils and to officers concerned, and that tenure of office and all rights of superannuation should be fully taken into the reckoning.

As regards the County of London, it is proposed that the functions of the boards of guardians, the Metropolitan Asylums Board, the managers of any sick asylum districts, and Poor Law school districts, should be divided between the county council and the borough councils, according to a scheme to be framed by the county council after consultation with the borough councils. The City of London is to be reckoned for this purpose as if it were a borough. The work of the assessment committees throughout the country would be taken over by the councils. The report is signed by all the members of the Committee subject to qualifying memoranda by certain individual members.

The fact that the report is being considered by Dr. Addison has led to the inference that it is intended (if it should be adopted by the Government) for application after the war. The Committee, however, does not, it is understood, make any recommendations as to when its proposals should be taken up. Some of its members are said to favour the view that it would be better to proceed promptly, in order that our system might have been reorganized when demobilization takes place, bringing, perhaps, greater calls for what is at present Poor Law relief. Other members of the Committee very possibly regard this as one of the questions that can hardly be settled in the midst of the war.

The report has already come under the attention of the Association of Poor Law Unions of England and Wales, of which Mr. John Spear, M.P., is president. It should be said that this body has been watching the matter for months past. When the Local Government Committee was first appointed the association sought to have representatives placed upon it, but were informed that the Committee was not set up on a basis of representation of public and other bodies, and therefore the request could not be granted. Questions have been addressed to ministers in the House of Commons from time to time, with the object of getting the decision reconsidered, but they were met with a negative.

A copy of the report was, however, through some medium made available for consideration by the association

at its meeting in London last week, and was discussed at length. The Association has for some time been preparing a scheme for the reorganization of boards of guardians. Amongst other proposals which it contains in draft is one for the abolition of the term "workhouse" and of other words which jar on present day feeling. It is thought that the phrase public assistance, or some such words, should be substituted for "Poor Law relief," and that thus the stigma of pauperism could be removed from the help given to those who are broken by misfortune. This scheme will shortly be ready for submission to Dr. Addison, and it is understood that he is prepared to weigh it carefully. Some such assurance is understood to have been received.

The Poor-Law Association holds very distinctly that there are strong arguments against boards of guardians being "scrapped," to use the expression of one of its members. It is urged that the committees existing and to be appointed by the councils would not have the same direct responsibility to the people because the election of councillors is on so many issues, and also because of the nomination of non-elected members. It is submitted that the election of boards of guardians by the people affords the best security for administration in the interests of the poor with due regard to those of the ratepayers. Persons who have not the time (and in some instances the means) to enable them to become county councillors serve in their own localities as guardians, and they are in close touch with the people. The view is also taken that the transfer of the work of the assessment committees to county councils, which is consequentially recommended to effect complete transfer, is undesirable, this important work being in experienced hands, and generally reckoned to be well performed.

The Man Power Debate.

In the course of the debate on the Man Power Bill last week Sir Donald Maclean (Chairman of the London Appeal Tribunal), warned the Government against expectation of getting more than a few men through the tribunals. He said that in two years the London Appeal Tribunal had given 50,000 decisions in respect of 40,000 cases, and out of these 40,000 only 3,000, including the conscientious objectors and men with special certificates, were running under exemption. In London they had got down almost to the bone. He asked that some general instruction should be given to the tribunals as to Grade 3 men (Army Auxiliaries), otherwise they would, though mainly unfit, be sent into the army. There were many cases in which a man was, *prima facie*, fit for the army, and yet if he were sent his death warrant was signed. Referring especially to cases of men over 35 years of age, he mentioned that the sickness casualties of men between 35 and 40 years of age were 250 per cent. more than those of men between 28 and 35 years of age. Sixteen per cent. of the pensions given were for sickness and disease. He complained of the system under which men were dealt with when they got into the army, and said that "colossal stupidity" was revealed.

Mr. E. Smallwood, the new member for East Islington, in a maiden speech in the same debate, urged that the War Office needed combing out. He spoke with some feeling, as he had lost both his sons in the war. He alleged as regards the younger son that there was discourtesy when he tendered a certificate signed by Sir Thomas Barlow for extended leave. As regards the other son, Mr. Smallwood told a painful story. It appeared that this young officer was in a military hospital in France, and Mr. Smallwood was not permitted to stay at his bedside the night he died, but had under regulations to leave the hospital. He was told by the matron that the rule must be kept. Mr. Smallwood quoted these experiences to insist that the War Office was soulless, and that changes were needed.

Orthopaedic Treatment of Discharged Soldiers.—Major David Davies asked the Pensions Minister whether he was aware that, with the exception of the Wrexham garden village training centre, there was at present no technical training centre or orthopaedic institution for special treatment available in North Wales, and whether he would consider the advisability of amalgamating the two Joint Statutory Committees of North and South Wales, so that the requirements of discharged soldiers in Wales might be dealt with by one committee, which would have regard to the provision of training and treatment for the whole of Wales. Mr. Hodge, in reply, said that he had no power to amalgamate the two Joint Committees, which were voluntary associations of local committees, and he doubted whether such amalgamation would be desired by either body. Their separate existence, however, was not a bar to the common use of institutions and trading centres in Wales. The hospital at Llandrindod Spa, which he was arranging, would take 150 cases, and would be available to the whole country, as was Wrexham already, for orthopaedic treatment. The general arrangements for training included the transfer of a man from one area to another when necessary.

Hospital Treatment of Discharged Disabled Men.—In reply to Sir Henry Harris, who asked the Pensions Minister whether he had come to any agreement with the London civilian hospitals as to the terms and conditions on which discharged disabled men would be treated, Mr. Hodge said that arrangements had been made with both London and provincial hospitals, and the terms would be communicated to all Local War Pensions Committees forthwith. In reply to another question by Sir Henry Harris, Mr. Hodge said he was fully aware of the difficulty experienced in London in obtaining in-patient treatment for discharged disabled men. It had been arranged that the War Office, recognizing the prior claim of the Pensions Ministry to the accommodation in civil hospitals, would refrain from requisitioning further beds in these hospitals, and would release the accommodation now occupied by it as rapidly as possible. Sir Henry Harris further asked whether Mr. Hodge would take steps to supplement the inadequate accommodation, having regard to the claims of ordinary civilians, and quite apart from military needs. Mr. Hodge said that a Medical Department had just been instituted at the Pensions Office, and was presided over by a very eminent surgeon. This department had the matter of hospital accommodation in hand. He was hopeful that under expert advice the difficulties referred to would be rapidly swept away. Sir William Collins asked if Mr. Hodge was aware that more than 1,600 beds had, since the beginning of the war, been added to the accommodation of the voluntary hospitals in London in order to meet the case of the admission of military patients.

National Service Medical Boards.—In reply to Mr. Snowden, Mr. Beck said that all members of the National Service Medical Boards were civilian medical practitioners. Certain of the presidents of the recruiting medical boards continued to act as chairmen of the National Service Medical Boards during the period of transference from the control of the Army Council to that of the Ministry of National Service, but these had now been relieved with the exception of two, who would be relieved within a few days. The President of the Recruiting Medical Board at Derby relinquished his position on December 1st, 1917, and had been succeeded by a well known highly qualified civilian medical practitioner. Inquiries were being made regarding the alleged conduct of the late President of this Board.

Discharged Soldiers and National Work.—Replying to Mr. Hogge, Mr. Beck stated on January 21st that it was proposed that men at present in civil life who had served in the forces and been discharged on account of disablement or ill health, and who were liable to re-examination and recall for service, should have an opportunity of engaging in work of national importance instead of re-entering the army. The work of national importance would be in an industry contained in a list to be settled. Each man must take steps to apply for employment, but every facility would be given him. Hitherto the concession had applied only to men who had served overseas, but in future it would apply to all who have served and been discharged or disabled. It would not apply to men who, without having served in the forces, have been exempted by the tribunals.

The Army Council and the Army Medical Service.—Major David Davies asked Mr. Macpherson whether, in view of the resignation of Sir Alfred Keogh and the appointment of his successor, the War Secretary was willing to consider the question of direct representation on the Army Council of the Royal Army Medical Corps, thus raising the status of the Army Medical Service. Mr. Macpherson replied that it was not intended to place the Director-General of Army Medical Services on the Army Council, but whenever matters affecting medical organization or administration were before the Council, the Director-General would be called in to give the Council the benefit of his advice. Major Davies asked whether it was true that Sir Alfred Keogh was offered a seat on the Army Council. Mr. Macpherson said he was not aware whether this was so.

UNDER the heading "Be careful with lithotrity in the wounded," Praetorius (*Muench. med. Woch.*, August 14th, 1917) records the case of a soldier wounded in the back by a mine explosion. Several projectiles were removed from his back and the wounds healed quickly, but cystitis, which developed soon after he was wounded, became steadily worse in spite of irrigations and drugs given by the mouth. About six months after he was wounded the urine was alkaline and contained a considerable amount of pus. The cystoscope showed diffuse chronic cystitis, but no scar or ulcer of the bladder. A somewhat elongated white stone, a little larger than a pigeon's egg, was seen, and a lithotrite was accordingly inserted. The crushing of the stone required only a few minutes, but as the last fragments were being demolished the lithotrite jammed, its blades remaining 2 to 3 mm. apart. Attempts to withdraw the lithotrite were so painful that a general anaesthetic had to be given, and even then the end of the lithotrite could not be pulled back further than to the middle of the anterior urethra. The urethra was incised at this point, and with the greatest difficulty a jagged piece of sheet iron was removed; the lithotrite was then easily withdrawn.

THE WAR.

THE WESTERN FRONT.

APRIL–NOVEMBER, 1917.

THE report of Field Marshal Sir Douglas Haig, describing the operations from the opening of the British offensive on the Western Front in April to the conclusion of the Flanders offensive in November, begins by describing the general allied plan as originally formed in November, 1916, and the modifications subsequently introduced. He describes the battle of Arras which opened on April 9th and was the main feature of the spring campaign, the battle of Messines which opened on June 7th, the third battle of Ypres which began on July 31st, the numerous counter attacks which followed each of these actions, and the various subsidiary operations. The Arras operations yielded 19,500 prisoners, among whom were over 400 officers, and 257 guns, including 98 heavy guns. The captures in Flanders amounted to 24,065 prisoners and 74 guns, besides machine guns and trench mortars. The total number of prisoners taken in the period under review was 57,696 including 1,290 officers. The dispatch concludes with a number of paragraphs dealing with the various branches among which is the following referring to the work of the medical services:

Medical Services.

The work of the Medical Service in all its branches has continued to afford me most valuable assistance. The high standard of efficiency displayed by all ranks of the medical service has resulted in an almost entire freedom from epidemic disease, and has been the cause of much saving of life and limb amongst the wounded.

The devotion and gallantry of the Royal Army Medical Corps and of the Medical Corps of the Overseas Dominions during the recent operations have earned universal admiration and praise. Their work of collecting the wounded from the front has been of an exceptionally arduous nature, owing to the condition of the ground and weather. I regret that so many gallant officers and men have lost their lives in carrying out their duties.

The Medical Service of the United States of America has shared in the work of the British Medical Service, and has given very valuable help.

I am much indebted to the devotion and work of the consulting surgeons and physicians and to the Auxiliary Services of the British Red Cross Society and Order of St. John of Jerusalem.

The Nursing Services, several of whose members have unfortunately lost their lives from hostile air raids, have, as always, devoted themselves with untiring care and zeal to their work of mercy.

The excellent organization and administrative work of the Medical Services as a whole have given me entire satisfaction.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Drowned.

SURGEON PROBATIONER L. P. STJ. STORY, R.N.V.R.

Surgeon Probationer L. P. StJ. Story, R.N.V.R., was reported as drowned, in the casualty list published on January 21st.

ARMY.

Killed in Action.

CAPTAIN A. K. SINHA, I.M.S.

Captain Atul Krishna Sinha, I.M.S., was reported as killed in action in the casualty list published on January 18th. He had been previously reported as missing so long ago as August 23rd last, shortly before which date his death must have taken place. He was born on August 4th, 1888, and educated at the Calcutta Medical College, graduating M.B.Calcutta in 1912, and at University College Hospital, taking the diplomas of M.R.C.S. and L.R.C.P. Lond., and also the Cambridge diploma in tropical medicine and hygiene in 1913, and the M.R.C.P.Lond. in 1914. He entered the I.M.S. as lieutenant on July 26th, 1913, and was promoted to captain on July 26th, 1916.

Died on Service.

BRIGADIER GENERAL A. A. HOWELL, C.M.G.

Brigadier General Arthur Anthony Howell, C.M.G., died suddenly at Blackdown Camp on January 15th, aged 56. He was born in 1862, the third son of the late Very Reverend David Howell, Dean of St. David's, and was educated at Shrewsbury School and at the London Hospital, taking the diplomas of M.R.C.S. in 1886, and the L.R.C.P.Edin. in 1891. He was in partnership practice at Worplesdon Hill, Brookwood, Surrey, where he was medical officer to the post office. He had held a commission in the auxiliary forces for many years, and attained the rank of lieutenant-colonel commanding the 3rd Territorial (City of London) battalion of the London Regiment, the Royal Fusiliers, on March 8th, 1910. He was given a brigade in 1916. He was also a member of the City of London Territorial Force Association, and held the Territorial Decoration. He served in the South African War in the City of London Imperial Volunteers, and gained the Queen's medal with four clasps, also being granted the honorary rank of captain in the army from December 1st, 1900. In the present war he was twice mentioned in dispatches, and had received the C.M.G. and the Russian Order of St. Anne.

Lieut.-Colonel R. R. SLEMAN, R.A.M.C.(T.F.), writes: It was a shock to many to hear of the death of Anthony Howell. He had as recently as January 10th attended a meeting of the City of London Territorial Association at the Mansion House and made an excellent speech. On January 15th he died suddenly at Aldershot. Howell commenced his military career as a volunteer medical officer, but soon took up a combatant commission, and at a time when the Territorial Force was not fashionable he raised a battalion of the London Regiment up to full strength; the men were of exceptionally good physique. Soon after the mobilization of the Territorial Force in 1914 Howell took his battalion East, and eventually it went to France and did splendidly, made its famous charge at Loos, and was commended in Lord French's dispatches. Howell was made a C.M.G., and later a substantive Colonel in the Territorial Force and a temporary Brigadier General. It is believed that this is a unique position for a medical man to hold. He was successful as a medical man in practice, and as a soldier he was a good disciplinarian, and always had the courage of his opinions. In South Africa he accompanied the march of the C.I.V. of a thousand miles, and did most of the journey on foot.

COLONEL J. B. MANN, R.A.M.C.

Colonel John Bently Mann, R.A.M.C.(T.F.), died at Manchester on January 15th, aged 56. He was the youngest son of the late Mr. Robert Manners Mann, surgeon, of Manchester, and was educated at Owens College, taking the diplomas of L.R.C.P.I. in 1884 and the M.R.C.S. in 1885. He was surgeon to the Manchester and Salford Lock Hospital, medical officer of No. 1 District and public vaccinator of No. 3 District of Manchester Union, and medical officer to the post office and telegraph department in Manchester. He joined the Manchester Volunteers as medical officer in 1886, and rose to be A.D.M.S. of the East Lancashire Division (T.F.). He went with the 42nd Division to Egypt in 1914 and served with them in Gallipoli, whence he was invalided with dysentery, which finally caused his retirement from the service. He was also a member of the Lancashire Territorial Force Association, and held the Territorial Decoration.

Prisoner of War.

Captain F. M. Walker, M.C., R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Forman, Ian Charles, Captain Canadian Light Infantry, eldest son of Dr. C. W. Forman, of the American Presbyterian Mission, Umballa, Punjab, killed in November. He had been at the front for over two years.

Greany, John Wingate, D.S.O., Captain Duke of Edinburgh's Wiltshire Regiment, eldest son of Surgeon-General John Philip Greany, I.M.S.(ret.), of Ealing, was reported wounded and missing on April 9th, 1916, and is now presumed killed from that date. He was at Oxford when the war began, and at once joined the Wiltshire Regiment, attaining the rank of captain on March 5th, 1915. He had served with his battalion in Gallipoli, where he gained the D.S.O., and went with it to Mesopotamia, where he lost his life in the unsuccessful attempt to relieve Kut in April, 1916.

Greenhill, R. F., Captain Lancashire Fusiliers, only son of the late Dr. E. F. Greenhill, died of wounds on January 1st. He got his first commission on April 28th, 1915.

Robinson, Richard Bertram, Lieutenant R.N.V.R., youngest son of Dr. R. Holt Robinson, died recently after an operation, aged 44. He was the secretary of the Burnham Yacht Club and of the British Motor-boat Club.

[*We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.*]

HONOURS.

A SPECIAL Supplement to the *London Gazette*, issued on January 18th, contains a further list of rewards for gallantry and distinguished service in the field. The individual acts of gallantry for which the decorations have been awarded will be announced in the *London Gazette* as early as practicable. The list includes the following medical officers who belong to the R.A.M.C. unless otherwise indicated:

Bar to the Distinguished Service Order.

Temporary Surgeon William James McCracken, D.S.O., M.C., R.N. (D.S.O. gazetted July 18th, 1917).

Distinguished Service Order.

Captain (acting Lieut.-Colonel) Robert Thin C. Robertson.

Captain George V. Davies, A.A.M.C.

Temporary Captains: Archibald S. K. Anderson, M.C., James T. Bowman, Howard B. Graham, Harvey Gordon Young, C.A.M.C.

Second Bar to the Military Cross.

Temporary Captain George D'Rastrik Carr, M.C. (M.C. gazetted February 2nd, 1916, first bar gazetted November 25th, 1916).

Bar to the Military Cross.

Temporary Surgeon James N. McBean Ross, M.C., R.N., attached R.M. (M.C. gazetted July 18th, 1917).

Captains: David MacDonald Steele, M.C., A.A.M.C. (M.C. gazetted November 14th, 1916); Robert Bell Stewart, M.C. (M.C. gazetted January 14th, 1916).

Temporary Captain Francis Ruthven Thornton (M.C. gazetted January 1st, 1917).

Military Cross.

Captains: William F. Abbott, Angus Cameron, Archibald John Collins, A.A.M.C., Joseph Wilfrid Craven, Henry Clarke Davis, C.A.M.C., Eric Macallan Gordon-Glassford, A.A.M.C., Hugh Edward Kirkland, A.A.M.C., Guy Ardlaw Lawrance, A.A.M.C., Alfred J. A. McCabe-Dallas, John Shaw Mackay, A.A.M.C., Philip McRitchie, Melrose Holton Mailer, A.A.M.C., James F. Stewart Marshall, C.A.M.C., Thomas Williamson Moore, C.A.M.C., Edgar Percival, D.S.O., Henry Frederick Preston, C.A.M.C., William Dempsey Quilty, A.A.M.C., Clive Frederic Robinson, A.A.M.C., Christopher Rogers, John Gray Ronaldson, Walter Hepburn Scott, Ernest C. Whitehouse, C.A.M.C.

Temporary Captains: John Frederick Broughton, Charles Launder Chalk, Henzell Howard Dummere, John Tryweryn Lloyd, James MacGregor, James Murdoch MacKay, David Matthew, Maurice Aloysius Power, Reginald Thompson Raine, Reginald Herman Tribe.

Temporary Lieutenant (Temporary Captain) William Kealty Campbell, D.S.O.

Temporary Lieutenant Kekhasru Sobraji Master, I.M.S.

The name of Major (temporary Lieut.-Colonel) P. S. Clarke, S.A.M.C., should have been included in the list of officers awarded the D.S.O. in the *London Gazette* of January 1st, 1918, and the necessary correction has now been made in the official records.

The following is a continuation from p. 97 of our last issue of the particulars of acts of conspicuous gallantry and devotion to duty for which the decorations announced in the BRITISH MEDICAL JOURNAL of October 6th, 1917, were awarded:

Military Cross.

Captain William Howard Edwin Stewart, R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of a loading post for ambulance cars. His work entailed his being on a road whenever shelling took place there, in order to accelerate the removal of the wounded from that point, and to arrange all possible protection for such wounded as could not be cleared. He personally went to the assistance of four men who had been wounded by a shell and dressed them in the open under heavy fire, setting an admirable example of coolness and devotion to duty under difficult and trying circumstances.

Temporary Captain George Min Adam, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. He carried on with his steady work of dressing and evacuating the wounded in the open under heavy shell fire until his dressing station had to be abandoned owing to its destruction. He then got his cases away safely under most trying conditions and resumed his work at another point, continuing until he was utterly exhausted. He set a splendid example of steadfast courage and devotion to duty.

Temporary Captain Stanley James Annear Beale, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when working in an advanced dressing post. This post was destroyed by a shell which killed the other medical officer and an orderly. Although badly shaken, Captain Beale promptly formed another post and continued to dress the wounded until relieved twenty-four hours later. It was owing to his untiring energy and splendid devotion to duty that many lives were saved.

Temporary Captain Geoffrey Andrew Bird, M.B., R.A.M.C.

A lorry containing ammunition was set on fire about 200 yards from his aid post. Although the road outside was heavily shelled he set a splendid example in personally carrying the wounded from the vicinity of the lorry to his aid post, making the journey under heavy shell fire, and in imminent danger of a sudden explosion of the ammunition, which eventually took place.

Temporary Captain Clarence Albert Brisco, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of bearer parties. After twenty-four hours' continuous work in attending to the wounded without sleep or rest he conducted stretcher parties over ground which was swept by shell and machine-gun fire and almost impassable on account of the mud. He showed a total disregard of his personal danger, both during the attack and for several days afterwards, and by his splendid devotion and gallantry encouraged his men under the worst imaginable conditions.

Temporary Captain William Thomson Brown, M.B., R.A.M.C.

Having gone out with the advanced party of his battalion at 6 a.m., he remained with them until the last party returned at midnight, rendering continuous assistance to the men of his own unit and also to many others wounded on the road. His personal gallantry and utter disregard of danger not only upheld the traditions of his own corps but set a fine example to all ranks of the unit to which he is attached.

Temporary Captain Wilfrid Thomas Chaning-Pearce, R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to wounded men belonging to nine different battalions under heavy and continuous shell fire. His aid post was the only one in the vicinity in such a forward position, and he worked continuously and without rest until all the wounded had been attended to, displaying splendid devotion to duty.

Temporary Captain Francis Bernard Chavasse, R.A.M.C.

During four days of heavy fighting he attended the wounded with untiring energy and exceptional gallantry at very great personal risk. On one occasion, while dressing the wounded in a shell crater under very heavy shell fire, he was hit by bits of shrapnel about the legs and face, but continued to dress each man in his turn and to encourage others who were waiting. On the following day, while dressing the wounded under very heavy shell fire, he was blown over by a shell, but picked himself up and continued his work with the greatest pluck and devotion. He refused medical assistance in both cases, and his indomitable courage was the cause of saving many casualties.

Temporary Captain Victor Lindley Connolly, R.A.M.C.

He led his bearers again and again through barrages of shell fire to attend to the wounded, and it was owing to his splendid courage and personal example that his bearers were kept at work clearing the wounded from a heavily shelled area.

Temporary Captain George Theodore Cregan, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded under heavy shell fire. A few days later, after he had completed his usual round, he volunteered to remain at an advanced dressing station which was short-handed, and worked continually for nineteen hours, treating and evacuating over 700 cases. This gallant and devoted act was performed under continuous and heavy shell fire, during which the dressing station itself was hit. His personal example and disregard of danger has at all times been most marked.

Temporary Captain Douglas St. Clair Creighton, M.D., R.A.M.C.

For conspicuous gallantry and devotion to duty in going forward to most exposed positions to dress and attend wounded, showing a total disregard for his personal safety. After he had cleared a very large area in this manner, he established a first aid post in a forward position, and from there gave great assistance to the wounded of two or three other regiments as well as his own. His gallant conduct and fearless devotion saved the lives of many wounded.

Temporary Captain Eric Payton Dark, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in leading his bearers. He displayed great gallantry and disregard of danger in moving about in the open under the heaviest shell fire, collecting and evacuating the wounded. He worked continuously without a rest for thirty-six hours, by his energy and determination contributing largely to the rapid clearing of the battlefield.

Temporary Captain James Walker Darling, M.B., R.A.M.C.

Throughout a long and tiring day he showed the utmost contempt of danger, his organization of aid posts and stretcher-bearers was beyond all praise, and his tireless energy and devotion in looking after the wounded were the admiration of every officer and non-commissioned officer of the battalion, many of whom specially mentioned him to the commanding officer on account of his gallantry.

Temporary Captain Harold Benjamin Day, R.A.M.C.

He worked night and day for four days with magnificent fearlessness, tending the wounded, not only of his own battalion, but also of all others in the vicinity. At one moment he led a party of stretcher-bearers across the open and brought back fourteen wounded in daylight, in full view of the enemy. This, however, is only one instance of the many heroic acts which this gallant officer performed under heavy shell and machine-gun fire.

Temporary Captain Robert Stuart Gibson, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty during an intense hostile bombardment. He crossed the ground where very heavy shells were continuously bursting, and remained in a battery position attending the wounded under heavy fire and at great risk to himself. He displayed magnificent fearlessness and devotion to duty.

Temporary Captain John Charles Boileau Grant, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty during an attack. Finding that all his stretcher-bearers were occupied he went forward and dressed the cases himself on the spot, sending them back as opportunity arose and stretchers turned up. By this gallant act of devotion he undoubtedly expedited the evacuation of the wounded from the shelled area.

Temporary Captain Norman Grellier, R.A.M.C.

For conspicuous gallantry and devotion to duty during an attack. A shell came through the door of his aid post, killing his sergeant and several other men; he himself was knocked over and severely shaken by the concussion. In spite of this, however, he carried on his work unaided, and remained at his post under continual hostile shell fire, setting a magnificent example of devotion and fearlessness.

Temporary Captain Frederick Harris, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in working for three hours in the open under intense hostile bombardment, during which time he succeeded in getting many of the wounded under cover, and undoubtedly saved many lives. His coolness and fearless devotion were beyond all praise.

Temporary Captain Howard Havelock Hepburn, M.D., R.A.M.C.

For conspicuous gallantry and devotion to duty in accompanying his brigade into a forward position, where he attended to the wounded under very heavy shell fire, and remained with the guns until they withdrew. By his coolness and courage he greatly inspired all the detachments, and carried out his work with utter disregard of personal safety throughout the day. But for his great gallantry, under most difficult conditions, many more lives would have been lost.

Temporary Captain James Hill, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in working unceasingly for forty hours evacuating wounded and continually going over ground which was under heavy shell fire. He showed great zeal and splendid fearlessness in his work, by his personal example earning the admiration of all ranks.

Temporary Captain Archibald Forbes Laird, M.D., R.A.M.C.

He established his aid post in a farm and attended the wounded for three days, although under constant shell fire, which at times became intense. He was slightly wounded in three places, but his gallantry and devotion to duty were the cause of saving many casualties.

Temporary Captain George Edwin Lindsay, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. In addition to dressing over 600 cases at his aid post, he made repeated journeys to the front line under heavy fire, seeking for and collecting wounded. He carried one wounded man off the field on his back through rifle, machine-gun, and shell fire, and when he had finally got all our own wounded back he made another journey into the front line to try to rescue some of the wounded enemy in front of our lines. By his coolness, daring, and unselfish disregard of personal danger he saved many lives.

Temporary Captain Jerome Ivo O'Sullivan, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of bearers. In conjunction with another officer he personally supervised the collection of many wounded in front of our lines and got them into dug-outs in our front line. He then conducted his bearers himself round these dug-outs, continuing to do so until all the cases had been cleared. During the subsequent operations he repeatedly led his bearers through heavy barrages, inspiring them with such enthusiasm by his own personal courage that the evacuation of all the wounded was successfully carried out.

Temporary Captain Clement Rickard MacLeod, R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. In the face of extreme hostile shelling he led stretcher-bearers, collecting the wounded and gassed cases, and throughout a period of twenty-four hours displaying a coolness and gallantry which directly influenced the saving of many lives.

Temporary Captain Daniel McVicker, R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded. He was three times wounded on the same day, but although in great pain he continued to carry on until completely exhausted and unable to go any further, when he was ordered back to the dressing station. His pluck and devotion to duty were beyond all praise.

Temporary Captain William Hilton Parry, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when in command of a bearer division. He led his bearer squads through shell fire with great fearlessness and devotion, in order to collect the wounded, and worked without a rest for thirty-six hours, dressing and evacuating wounded from the front line under the most trying conditions.

Temporary Captain James Alexander Paterson, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when the rear of his battalion was heavily shelled on the line of march. Under an intense hostile bombardment he hastened to the spot, dressed the wounded, and cleared them from the road, personally seeing to their removal to the aid post. He then returned and cleared the dead from the road, setting a fine example of coolness and disregard of danger.

Temporary Captain Frederick Tavinor Rees, R.A.M.C.

For conspicuous gallantry and devotion to duty when in command of bearer divisions. He displayed tireless energy in making preparations for the attack, and during the operations carried out his duties with splendid devotion, frequently working under difficult and dangerous conditions. Early in the action he went forward under fire and made a thorough personal reconnaissance over difficult ground, thereby facilitating the clearance of the wounded.

Temporary Captain Douglas Swan Robertson, M.B., R.A.M.C.

Although slightly gassed on the evening before an attack, he carried on throughout the whole of the following day and night, attending to the wounded in the open under heavy shell fire with a splendid disregard of personal danger, although nearly all his stretcher-bearers were killed or wounded around him. Two days later he helped to dig out a man who had been buried by a shell, working the whole time under heavy shell fire. He was slightly wounded, but remained with his battalion.

Temporary Captain Alexander Hugh Dickson Smith, R.A.M.C.

During a heavy hostile bombardment of a battery position a gunner was severely wounded and buried by a shell. Captain Smith came over from the next battery position, and, with the assistance of a gunner, helped to extricate the wounded man and dress him where he lay. The enemy's fire continued throughout, one shell falling a few yards away and wounding the gunner. In spite of this, however, the dressing was completed and the wounded man safely removed.

Temporary Captain James Anstruther Smith, M.B., R.A.M.C.

During an advance he worked with unflinching energy, collecting and dressing the wounded under heavy fire in the open. By his great personal courage and devotion to duty he cheered all ranks and undoubtedly saved many lives.

Temporary Captain Thomas James Logan Thompson, M.B., R.A.M.C., attached K.O.S.B.

He established an aid post, where he worked continually at the evacuation of the wounded, although under heavy shell fire and in the open for most of the day. He was very cool and wonderfully cheerful during the whole time, especially under particularly heavy shell fire during the night, by his splendid example inspiring the wounded with the greatest confidence.

Temporary Captain Edward Archibald Walker, M.D., R.A.M.C.

For conspicuous gallantry and devotion to duty in continually leading his stretcher-bearers through heavy barrage and successfully bringing back wounded under heavy shell fire.

Temporary Captain Hubert Francis Wilson, M.B., R.A.M.C.

He repeatedly led stretcher-bearers under heavy fire, and succeeded in evacuating all the wounded on his front; and when most of the stretcher-bearers had become casualties he organized a party of riflemen, with whom he worked for eight hours in the open under shell fire, and continued to clear many wounded. He then returned and led up another large party, with which he succeeded in clearing the front, having displayed splendid courage and devotion to duty throughout the day.

Temporary Lieutenant Gerald Woodforde Harrison, R.A.M.C.

For conspicuous gallantry and devotion to duty during an attack. His aid post being blown up, he worked in the open, dressing the wounded, moving freely about under heavy shell fire, and by his great personal exertions and complete disregard of danger, under very trying circumstances, he was instrumental in saving the lives of many men.

Temporary Lieutenant Reginald Gordon Hill, M.B., R.A.M.C.

During an attack he continually attended to wounded under a heavy barrage, and, on the objective being gained, he quickly formed a dressing station, where he was indefatigable in his attention to the wounded of his own and another battalion, although under continuous fire for two days. By his cheerfulness and splendid devotion to duty he set a fine example to all ranks.

Temporary Lieutenant William Johnstone Isbister, M.B., R.A.M.C.

During the attack and capture of a position he displayed complete disregard of danger in attending to the wounded and evacuating them under heavy shell fire During this work, all of which was done under great difficulty and practically in the open, he was once partly buried, but completed his dressing of the wounded, setting a splendid example of devotion to all.

Temporary Lieutenant Ronald Sinclaire Kennedy, R.A.M.C.

For conspicuous gallantry and devotion to duty in dressing and attending to wounded men under extremely heavy shell fire. At great risk of his life he made several journeys to the front line, and personally brought in wounded men who otherwise must have been killed by the intense hostile barrage.

Temporary Lieutenant Peter Ryan, R.A.M.C.

When heavy casualties were occurring in the batteries he showed complete disregard of danger in going out into the open for the wounded, rescuing those who were buried, and dressing the wounded. During the whole time heavy shells were falling close by, and on two occasions he was knocked down by these and by exploding ammunition dumps.

Temporary Lieutenant Thomas Charles Dalrymple Watt, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty under exceptionally difficult and trying circumstances. Owing to continual rain and heavy shelling, no trenches were available, and the men had to be distributed amongst shell holes, the regimental aid post being in the open. He attended to the wounded unceasingly all day under continuous shell fire, repeatedly going through heavy fire to administer first aid. Owing to the mud, many of the men would undoubtedly have been drowned but for his prompt assistance, and it was due to his splendid organization and devotion to duty that all the wounded were evacuated by the evening.

MENTIONED IN DISPATCHES.

A Supplement to the *London Gazette*, issued on January 16th, contains a list of names brought to the notice of the Secretary of State for War by General Sir Edmund Allenby, Commanding-in-Chief Egyptian Expeditionary Force, for distinguished services in connexion with military operations under his command. The following medical officers are included in the list:

Staff.

Colonel (temporary Surgeon-General) J. Maher, C.B., A.M.S.

Lieut.-Colonels (temporary Colonels): E. B. Dowsett, R.A.M.C., A. H. Tubby, C.M.G., M.B., F.R.C.S., A.M.S.

Major (temporary Lieut.-Colonel) H. Richardson, M.D., R.A.M.C.

Majors: C. E. Hercus, M.B., N.Z.M.C., P. S. Lelean, C.B., F.R.C.S., R.A.M.C.

Royal Army Medical Corps.

Lieut.-Colonels: A. C. Goodwin, M.B., F.R.C.S., H. W. Thomson, M.D.

Majors (temporary Lieut.-Colonels): J. W. Bird, D.S.O., J. M. G. Bremner, M.B.

Majors (acting Lieut.-Colonels): A. Leggat, M.B., J. W. Leitch, M.B.

Major F. Gracie, M.B.

Captain (acting Lieut.-Colonel) T. B. Layton, M.D.

Captains: F. Alcock, M.D., E. C. Crichton, M.B., E. P. Minett, A. R. Muir, M.B., R. P. Starkie (S.R.), I. D. Stubbs.

Temporary Captains: M. Bates, M.B., F.R.C.S., C. I. Hannigan, M.B., W. Leggett, M.D., R. M. Wright, M.B.

Temporary Quartermaster and honorary Lieutenant F. L. Harsant.

Australian Army Medical Corps.
Captains J. F. G. Fitzhardinge, H. Sutton.

Indian Subordinate Medical Department.
First Class Subassistant Surgeon Abdul Majid.

The list also contains the names of twenty-four warrant and non-commissioned officers and privates of the R.A.M.C. and four of the A.A.M.C.

England and Wales.

PHYSICAL TRAINING IN SECONDARY SCHOOLS IN WALES.

THE Welsh Department of the Board of Education has issued a hortatory memorandum to educational authorities in Wales on the neglect of physical training in secondary schools in the principality. There is one paragraph indeed which is distinctly minatory, for it informs all the authorities that no school can henceforth be regarded as efficient unless it makes proper arrangements for the physical training in every school of all pupils fit to receive it, or is at least doing all in its power in this direction. The Welsh Department of the Board of Education is a little whimsical in its requirements, inasmuch as it will not accept military drill and insists upon the schools building gymnasiums. A scheme of physical training in a secondary school should include (*a*) a suitable plan for physical exercises, comprising (1) formal gymnastics on the line of the Swedish system; (2) dancing "suitable for use in schools"; and (3) playground and field games, swimming, etc.; (*b*) fully qualified teachers of gymnastics; (*c*) a room or gymnasium containing at least a minimum of Swedish apparatus; (*d*) arrangements for not less than three lessons a week in formal gymnastics (including team games, dancing, etc.) of thirty to forty-five minutes in duration, according to the age of the pupils. It does not hope at once to attain this ideal, but requires every school to comply with two conditions—namely, that physical training should always be in the hands of a teacher who has had some special training on modern lines, and a minimum of two lessons a week of half an hour's duration, given at a period of the day favourable to the teaching and performing of physical exercises. The supply of expert teachers being limited, the Board is prepared to accept as physical trainer the ordinary class teacher who has received some special training. It urges that greater facilities should be afforded to teachers to improve their qualifications by taking the summer or vacation course of instruction in physical exercises officially recognized by the Board of Education, which for the last two or three years has granted allowances to selected teachers to enable them to attend such courses. The allowances have been travelling expenses and £1 a week for maintenance! The Board's grants, however, are limited, not only in amount but in number, and it urges local education authorities to "be liberal in offering similar inducements to teachers to undertake this training." It also advises that it would be advantageous to allow the organizer of physical training, where appointed, to exercise general supervision over the secondary and technical schools as well as over the public elementary schools. It is pointed out that an urban authority may adopt the Museums and Gymnasiums Act, 1891, under which it can provide a gymnasium and establish classes and grant the exclusive use to any person or body of persons for two hours a day for gymnastic exercises on conditions as to payment, and so on, as may be arranged. The Board is prepared to consider applications for grants under Article 44 of the new Regulations for Secondary Schools in Wales, to enable visits to be paid by teachers of physical training to a school chosen as specially suitable, and expresses the expectation that school governors will avail themselves of the opportunity created by the payment of increased grants to secondary schools to place the teaching of physical exercises on a far higher plane than it occupies at present in Wales, and in particular to appoint well-qualified and adequately remunerated teachers of the subject. The document does not seem to disclose much foresight or insight. The insistence on gymnasiums appears to be an example of the Germanization prevalent before the German war among Government officials. Might not the Secretary have found better employment for his own time and the depleted stock of printing paper?

THE LIVERPOOL MEDICAL INSTITUTION.

At the annual meeting of the Liverpool Medical Institution on January 17th it was stated that the total membership is now 392 as against 386 at the beginning of 1917. The financial statement, in spite of the fact that no subscriptions have been demanded from members on active service, showed a credit balance, due to various economies by which expenditure has been diminished. As a result of the biennial election Mr. William Thelwall Thomas, M.Ch. Liverpool, F.R.C.S., Honorary Surgeon to the Liverpool Royal Infirmary, was unanimously elected President; Mr. D. Douglas-Crawford, Mr. G. S. Stansfield, Mr. K. W. Monsarrat, and Dr. Llewellyn Morgan were elected Vice-Presidents; Mr. C. Thurstan Holland, Treasurer; Dr. Hubert Armstrong, General Secretary; Dr. Walter Oram, Secretary of Ordinary Meetings, Mr. T. C. Litler-Jones, Secretary-elect; Dr. J. Martin Beattie, Secretary of Pathological Meetings, Dr. H. Leith Murray, Secretary-elect; and Dr. R. W. Mackenna, Librarian and editor of the *Liverpool Medico-Chirurgical Journal*. The customary vote of thanks was passed to the retiring officers.

CENTRAL MIDWIVES BOARD.

The Board held penal sessions on January 9th and 10th, Sir Francis Champneys presiding. Eleven cases were decided, and of the women cited to appear five were struck off the roll. The most frequent charge was that of not obtaining medical aid for ophthalmia neonatorum. Inability to take the pulse and temperature and technical breaches of the rules also figured largely.

At the ordinary monthly meeting on January 10th the Standing Committee reported a letter from the Child Welfare Inquiry Office, asking the Board to appoint a representative to attend a national conference to be held on February 14th to consider a scheme adopted by the Child Welfare Council recommending changes in the law with regard to unmarried mothers and illegitimate children. The Board decided to appoint Mrs. Salter as its representative. With reference to a letter from the Deputy Medical Secretary of the British Medical Association calling the attention of the Board to an advertisement by a midwife offering to attend patients at their own homes for "twilight sleep" treatment, it was decided that the midwife should be cited to appear before the Board. Eight women were removed from the roll on their own application.

A MINISTRY OF HEALTH.

On January 17th the executive of the Urban District Councils Association, at the Central Hall, Westminster, recorded its opinion that the Local Government Board should be recognized as the Ministry of Public Health, that the creation of a new Ministry would be undesirable on economic grounds and disastrous to the efficient working of the public health services, and that it was essential that the local administration of public health matters should remain in the hands of local authorities. Three representatives were appointed to discuss the matter with Dr. Addison (Minister of Reconstruction).

Scotland.

MOTHER WELL.

THE Carnegie United Kingdom Trust has determined, as a result of its inquiry into the physical conditions of mothers and children in the United Kingdom, to assist in the establishment of model welfare schemes in certain urban centres. It has selected Motherwell, in Lanarkshire, as the town in which to make the first experiment in Scotland. Motherwell has a population of 40,000, and is the centre of a district which includes Bothwell, about three miles nearer Glagow, engaged in coal-mining and in iron and engineering works. The Town Council of Motherwell has accepted the offer of the trustees to meet the cost of erection and equipment of a building, provided the council supplies a suitable site; that the plans and estimates to be drawn up by the council shall be approved by the trustees; that the council will maintain the welfare centre by means of Government grants and local rates and contributions; that the scheme is made part of a local comprehensive system of physical welfare approved by the Local Government Board for the purpose of imperial grants; and that the council shall make reports on the work of the centre to

the trustees, to be embodied in their annual reports. The town council, after accepting the offer, instructed the Public Health Committee to frame a scheme. A punning correspondent suggests that the scheme should serve to keep the mothers well in Motherwell and the mothers and infants both well in Bothwell.

DISABLED SOLDIERS.

At a meeting on January 12th of the Joint Institutional Committee for Scotland, consisting of representatives of the Scottish Joint Disablement Committees, the Red Cross Society, and the War Office, when Sir A. Griffith-Boscawen, Parliamentary Secretary to the Ministry of Pensions, was in the chair, it was reported that the neurasthenic home of recovery at Craigend, Liberton, Edinburgh, would probably be ready at the end of February, and that the epileptic colony at Murieston, Mid-Calder, would be opened in the course of a few days. It was also reported that the Red Cross Society would place a number of small auxiliary hospitals no longer required by the military authorities at the disposal of the Committee for use as convalescent homes. The erection of a sanatorium for consumption at Stornoway was approved and plans were considered for extending the Springfield colony at Polton. A combined hospital and hostel is to be established at Aberdeen to which men can be transferred for the three weeks immediately preceding their discharge from the army. It was stated that the difficulties of the Committee would be considerably increased by a recent order of the War Office forbidding the readmission of discharged men to military hospitals for in-patient treatment. The Scottish section of the Committee, appointed by the Ministry of Pensions to consider the adequacy of hospital accommodation and facilities for treatment both for discharged men and the civil population throughout Great Britain, has held a meeting in Edinburgh, when it was decided to assist the Scottish Insurance Commission in completing the information already in its possession with regard to hospital accommodation, facilities for nursing, and other matters in connexion with treatment before proceeding to any independent inquiry. The Scottish section of the Committee consists of Sir A. Griffith-Boscawen (chairman), Sir Donald MacAlister, Dr. J. C. McVail (Scottish Insurance Commission), Dr. Leslie Mackenzie (Local Government Board), and Sir John Macaulay.

Ireland.

NATIONAL HEALTH INSURANCE IN IRELAND.

THE report on the administration of National Insurance during the years 1914–1917 contains, as was stated last week, a section on Ireland. As the result of a circular deprecating during the continuance of the war transfers from one society to another, save in exceptional circumstances, a great and continuous decrease in the numbers has occurred. During the half year before this circular was sent out there were 2,464 such applications for transfer, but in the following six months only 379. A small proportion of the Irish societies, mostly those of small membership, have experienced deficiencies in their administrative accounts. For the period ended January 11th, 1914, there were twenty-six deficiencies, for the period ended December 31st, 1914, there were sixteen, and for the following year thirteen. In twelve cases the deficiencies were small and were carried forward, as permitted by the regulations. The great majority of the remaining deficiencies have been, or are being, made good by other means than levy. The number of approved societies operating in Ireland on December 31st, 1916 was 223; of these 213 were centralized societies, and 10 societies with branches. Immediately preceding the outbreak of war there were in Ireland 716,318 insured persons, 480,028 men and 236,290 women. The total contribution of Irish approved societies towards the financing of the war by investment in war securities of moneys arising through the National Insurance Acts may be taken at approximately £400,000, apart from the National Insurance moneys invested in those securities by the National Debt Commissioners.

Of the thirty-nine Insurance Committee areas in Ireland, the County Councils of thirty have appointed a tuberculosis officer, and either a partial or a complete scheme for the prevention, detection, and treatment of tuberculosis is in operation. Comprehensive agreements have been entered into between the insurance committee and the council in twenty-two of these areas, and it is hoped that, as a result of negotiations now proceeding, agreements will shortly be completed in five other areas. In eight areas the councils have not yet formulated any schemes for the treatment of tuberculosis. In one area a scheme which was in operation has been abandoned, but on the whole the agreements have so far proved very successful. The number of beds available for the treatment of tuberculous cases in sanatoriums has increased considerably, but further accommodation is necessary if sanatorium treatment is to be provided promptly in each case. The accommodation in institutes for the treatment of advanced cases is still very inadequate, and the position in this respect has been rendered worse in consequence of the war. No change has been made since the last report in the condition governing the provision of domiciliary treatment, but the difficulties existing in certain areas, as regards the fees payable to the medical profession, have, it is stated, to a large extent been removed. As a result of their experience since the commencement of the Insurance Act, the Commissioners are of the opinion that no really satisfactory progress in dealing with the problem of tuberculosis is possible until all forms have been made compulsorily notifiable. There is no doubt that through absence of compulsory notification, application for treatment is, as a rule, made only at a stage of the disease when either a prolonged and costly course of treatment is necessary with uncertain results, or the disease is so advanced that expenditure on treatment cannot be productive of any lasting results.

At present there are 1,412 medical certifiers in Ireland. The new scheme of certification, it is said, has proved a considerable improvement upon the conditions which obtained previous to its coming into operation.

As medical benefit is not available in Ireland, the scheme of benefits for exempt persons differs from that in operation in Great Britain; the qualifications for sanatorium benefit are slightly different, and in lieu of medical benefit a sickness benefit of 6s. a week, commencing from the seventh day of illness, is provided.

IRISH COUNTIES WAR HOSPITAL.

At a meeting of the executive committee of the Irish Counties War Hospital, Lieut.-Colonel Pringle, F.R.C.S.I., submitted statistics for the first six months, showing that 817 men had been admitted, of whom 631 had been discharged and 186 remained under treatment. Of the 631 men discharged, no fewer than 146, or about 25 per cent., have been returned to their regiments for service, and 131 sent to command dépôts or a military convalescent hospital, all of whom would probably be able to rejoin their units in less than three months; it thus appeared that 43 per cent. of the patients discharged were able to rejoin the colours either immediately or in the near future. Of the remainder, two died, ten were discharged from the service, and the balance either transferred to other primary hospitals (generally for the purpose of being nearer their homes), to auxiliary convalescent hospitals, or to special hospitals (mental, infectious cases, etc.). A meeting of the general committee will be called at an early date, when a half-yearly report prepared by the finance committee will be presented.

IRISH TUBERCULOSIS MEDICAL ASSOCIATION.

A meeting of the members of the Irish Tuberculosis Medical Association was held in Dublin last week. Dr. A. H. Hanley was elected president, Dr. Gillespie and Dr. Cuffe vice-presidents, Dr. Quinlan honorary secretary, and Dr. Timoney honorary treasurer. In the discussion which took place stress was laid on the importance of bringing cases to the notice of the tuberculosis medical officer in an early stage, as at that stage cases invariably yielded good results. It was recommended that opportunities should be given to medical students for seeing cases of disease in an early stage with the tuberculosis medical officer, and that lectures on the early diagnosis of tuberculosis should form part of the curriculum. It was also advised that the time spent by nurse probationers in sanatoriums should count as part of their general training.

A deputation was appointed to wait on the Local Government Board, to discuss, among other matters, the necessity of standardizing the records for all countries.

NORTH DUBLIN UNION.

The guardians of the North Dublin Union are discussing the diet in the nursing ward in connexion with the occurrence of six cases of typhoid fever. Dublin itself is said to be peculiarly free from epidemics, and it is thought that the cases in the nursing ward may be connected with the alleged habit of some of the women of keeping unused food in the washhouse or lavatory. The women appear to have objected to the soup given to them, and Dr. Flood, the Local Government Board inspector, has expressed the opinion that the diet is insufficient for nursing mothers who are working in the laundry. The board of guardians has called for a further report, and meanwhile has resolved to accept Dr. Flood's recommendation that the nurseries should be moved.

Canada.

THE MILITARY HOSPITALS COMMISSION.

THE Military Hospitals Commission, which is charged with full powers in connexion with returned soldiers, had about 11,000 men in its institutions last November, and it was expected that the number would be increased to 15,000 before the end of the year. It has been difficult to arrange for adequate medical and surgical treatment, owing to the fact that so large a proportion of the medical men of Canada have placed their services freely at the disposal of the military authorities, that so many are now serving at and near the front, and that great progress has been made in the treatment of men wounded or invalided in the war. An arrangement has now been reached with the Department of Militia and Defence by which the medical services in the institutions of the Commission shall be performed by the Army Medical Corps of the Department of Militia and Defence. Lieut.-Colonel Alfred Thompson, M.P., medical superintendent of the Commission, has received a staff appointment as Assistant-Director of Medical Services (Invalids). He will, under the Director-General of Medical Services (Surgeon-General Fotheringham, C.M.G.), carry on this work with a staff selected from the Army Medical Corps. The Militia Department will make arrangements by which the present medical staff can be retained. The office of Lieut.-Colonel Thompson as A.D.M.S., Invalids, will continue to be at the head quarters of the Military Hospitals Commission. There will thus be linked together, in caring for those invalids, the Military Hospitals Commission and the Army Medical Service Corps.

PUBLIC HEALTH IN CANADA.

The number of rejections among recruits on account of physical unfitness since the beginning of the war has awakened the general public to the importance of hygiene and preventive measures against disease. There is a general feeling that the remedy lies in the co-ordination of efforts directed towards the conservation of health, and there is a movement towards the establishment of a Federal Bureau, or, failing that, Provincial Departments of Public Health. The establishment of a Federal Bureau of Health has long been advocated by the medical profession, and, of late, resolutions have been passed by various bodies in Alberta and other provinces in favour of the creation of a provincial department. In the province of New Brunswick Mr. John Hall, a graduate of the Massachusetts Institute of Technology, has been appointed to make a survey of health and sanitary conditions in the province as a preliminary step towards the establishment of a health department as a branch of the provincial government.

THE trustees of the Rockefeller Foundation in announcing their budget for 1918 state that possibly more than £2,000,000 will be spent in public welfare work, half of which will be used for war relief. If necessary, the Foundation can draw on an available fund for a further million for this purpose. A sum of £215,400 will be applied to the combating of hookworm, yellow fever, and other scourges. Appropriations to the amount of £83,000 are made for the Tuberculosis Commission in France.

Correspondence.

DEFECTS IN THE LUNACY LAWS.

SIR,—The treatment of shell shock and other mental cases arising from the war has accentuated the necessity for amendment of the existing lunacy laws.

A Select Committee of the Medico-Psychological Association is now sitting to consider the best method for securing the legal changes which have been long overdue in this direction. The Committee invites information from medical men and others intimating their experience of the defects in the present system of lunacy laws and administration, and indicating what legislative alterations are in their opinion desirable.

Communications should be sent to the Secretary of the Committee at 10, Chandos Street, Cavendish Square, W.1. —We are, etc.,

H. WOLSELEY-LEWIS, M.D., F.R.C.S.,
Chairman.
R. H. COLE, M.D., F.R.C.P.,
Secretary.

January 19th.

THE PULSE PRESSURE TEST BEFORE OPERATIONS.

SIR,—Your reviewer of Cashman's work on the above subject has taken very meekly Sir James Mackenzie's rebuff, and humbly bows down under the weight of such an authority. Sir James Mackenzie's facts, when he has got any to state, are of value; but, apart from facts, his opinion should carry no more weight than that of any one else; in fact, I am inclined to think that a few such letters, based neither on facts nor on a knowledge of the subject, will diminish his prestige as a heart specialist. "Beyond supplying the force that causes the blood pressure the heart takes little part in the variations that occur." Apart from such a force no arterial pressure could be maintained, and when the force-pump ceased to act the arterial pressure would fall to zero in a second or two required to expend the energy stored up in the arterial walls. "The factors concerned in regulating the changes in blood pressure are so obscure that observations drawn from them are little better than guesswork." If this be really the matured opinion of Sir James Mackenzie then the sooner he tries to clarify the obscurity the better. An American recently stated facetiously that in the present day there are many observations, wise and otherwise, mostly otherwise. I am afraid Sir James Mackenzie's observation belongs to the latter class. If he would devote a little time, if he have any to spare, to a study of the actions of the secretions of the ductless glands, a good deal of the haziness which at present seems to obscure his mental vision might vanish. If he had paid some attention to my observations on the effects of hyperthyroidism on the soldier's heart he might not have fallen over head and ears into that pitfall laid for him with the "heart pills."

The great value in Cashman's work is not in the mere statement of the pulse pressure but in the variations which occur in that pressure under exercise and change of posture. Personally I do not care for a mere statement of pulse pressure as a separate entity apart from the diastolic and systolic pressures. A pulse pressure of 50 between a diastolic pressure of 100 and a systolic pressure of 150 mm. of mercury shows a much better pulse than one of a pressure of 100 between 150 and 250. In aortic regurgitation there is often an enormous pulse pressure, but this is not the kind of heart which one would deliberately select as specially suited for an anaesthetic. A glass of whisky and hot water will at least temporarily raise the pulse pressure in most individuals, but this is not the kind of drug which one would select to improve the staying power of the heart.

In conclusion, I wish to subscribe to the value of Cashman's observations, and will reserve any further remarks on the subject for a future occasion.—I am, etc.,

Liverpool, Jan. 20th. JAMES BARR.

PRIMARY EXCISION OF GUNSHOT WOUNDS OF THE ELBOW-JOINT.

SIR,—Mr. Fagge (January 5th, p. 36) very correctly criticizes the term "primary" which I used in speaking of an early operation in distinction to a late or secondary

operation when healing has occurred and ankylosis has resulted from the sepsis in the joint. I agree with him that the word "primary" should be reserved for those cases which are operated upon in the casualty clearing stations in the first few hours after the infliction of the wound. My recent experience in the casualty clearing stations in France has impressed me with the great efficiency of the surgery carried out there, more especially in the early treatment of wounds, and has still the more impressed me with the fact that if, in suitable cases, excision of the elbow-joint were performed after thorough removal of the wound and infected tissue and the incisions closed, the results obtained would be much better than if operation be performed when sepsis has become established.

The choice of a case suitable for excision depends chiefly upon the local conditions. Doubtless the removal of a small attached piece of articular surface is enough in slight injuries, but where the whole articular surfaces are much comminuted and the fracture lines do not spread too far into the shaft of the humerus, I consider that an immediate excision of the joint would give the best result, for, as Mr. Fagge points out, there is a greater probability of restriction of movement by callus formation about the joint than that a free removal will result in a flail joint. Hence a careful selection on the part of the surgeon is necessary before excision is undertaken.

Mr. Hey Groves would limit early operative treatment to the removal of detached fragments of bone, and suggests that in septic cases drainage of the elbow-joint can be obtained by division of the base of the olecranon, with subsequent reattachment to the ulna. I tried this method quite early in three cases, but abandoned it because I was unable to control the sepsis by it. At the same time the results obtained by excision in the presence of sepsis in the joint have been such that I would not hesitate to repeat it when similar suitable cases are encountered.

Mr. Hey Groves remarks that the olecranon should always be preserved if possible so as to retain the action of the triceps. This can equally well be obtained by reflecting the triceps with the periosteum of the olecranon on each side by a median posterior incision.—I am, etc.,

London, Jan. 21st. R. H. JOCELYN SWAN.

VACCINES IN SKIN DISEASES.

SIR,—With reference to Dr. Adamson's very interesting paper in your issue of January 5th concerning the treatment of sycosis, impetigo and furunculosis, may I comment upon one or two of his statements from a bacteriological point of view?

At the outset Dr. Adamson states that "considerable numbers of able-bodied men become invalided [presumably he speaks in a military sense] on account of the chronic staphylococcal infections of the skin" aforementioned. That the incidence of such complaints is considerable no military doctor will deny, but I must confess that these complaints, judging from such cases as I have seen in the last 2¾ years, have seldom, if ever, led to invaliding from the army—for this reason, that where I have worked we have managed to cure such cases. At this hospital I have had sent to me within the last six months only nine cases of intractable sycosis, but the incidence may be greater elsewhere. One case was treated with medicaments for six weeks and his sycosis became worse and involved beard, ears, and right wrist (impetigo-sycosis). He then came to me and had an autogenous vaccine *and no other kind of treatment whatever*. He began with a dose of 200 million and ended, completely cured, without any reaction to speak of, at the end of three months, with a dose of 2,000 million (*Staphylococcus aureus*). There was no relapse. The man is an orderly still working here. The other eight cases were cured more swiftly. Amenable cases are cured by the physicians and many do not reach me. As regards chronic furunculosis, I have on record a recent series of 77 consecutive completed cases. All are cured save one who was at first treated with stock vaccines, and these having failed to cure within a reasonable time he now receives an autogenous vaccine and is rapidly improving, that is, he has a smaller and only an occasional boil. Shortly he will be clear.

Dr. Adamson says in relation to furunculosis—and I think somewhat unjustly—that "the once much-vaunted treatment by vaccines has not proved the panacea it was proclaimed." Given autogenous vaccines in every case, I beg to differ. I am treating 30 to 40 skin cases per week therapeutically with vaccines in a hospital of 1,000 beds. The majority of these are skin cases. Surely there must be something in all this? With reference to chronic impetigo of the trunk, not many cases have come my way. I do not think we get many, but I have treated six cases of a pure streptococcal pyodermia with vaccines, and have obtained a full percentage of cures. I am not aware that this condition is ever converted into anything else bacteriologically.

I am sure that the reason why vaccines often fail is because the fact of germ specificity is not sufficiently recognized. The immunizing powers of a stock vaccine may be sufficient for prophylaxis, as in typhoid (and sometimes not completely so even then), but it is rare that they possess sufficient immunizing powers to be therapeutic. Commercial vaccines may be stale. Most therapeutic vaccines are stale after three months, especially those of the coli-typhoid group, as Emery and Allen have pointed out. Hence, if one fails to get cures with small doses such as Dr. Adamson uses in furunculosis and of stock vaccines, personally I for one am not surprised that he is disappointed. But why blame vaccine therapy?

I beg to thank Colonel Sir W. R. Crooke-Lawless, M.D., C.B.E., C.I.E., for permission to publish these results.—I am, etc.,

A. GEOFFREY SHERA, B.A., M.D., B.C.Cantab.,
Hon. Captain R.A.M.C.

Pathological Laboratory,
British Red Cross Hospital, Netley,
January 15th.

THE CAUSATION OF SEX IN MAN.

SIR,—The review in the JOURNAL of January 5th (p. 18) of Dr. Rumley Dawson's book reminds me of a case in which some years ago I operated on a lady married for seven years without children, who now had a tubal pregnancy on the left side. I was compelled to remove the ovary on that side with the tube. Afterwards she wrote to me that she had a healthy daughter, followed in due course by another, and then by a healthy son. I think this makes it plain that the theory of each ovary being responsible for the one sex cannot be true.—I am, etc.,

Lurgan, Ireland, Jan. 16th. J. SINGLETON DARLING, M.D.

SIR,—The review of Dr. Dawson's book states that he claims that ova from the right ovary produce males, and ova from the left ovary females. The following facts in my own experience are against Dr. Dawson's theory: On July 5th, 1908, I assisted in the removal of the right ovary of Mrs. —— at the Warrington Infirmary for a cystic tumour with twisted pedicle. Since then she has had three children, two boys and one girl. The ova concerned, I presume, came from the left ovary, for the possibility of ovarian tissue being included in the stump of the pedicle in this case may be wholly discounted.—I am, etc.,

Warrington, Jan. 21st. J. S. MANSON.

SHOULD NON-WORKERS HIBERNATE?

SIR,—Should non-workers hibernate? Yes, in a modified sense! The food we consume is chiefly spent in producing and maintaining animal heat, physical and mental energies. Roughly, five-sixths of food values go to the former and one-sixth to the two latter. Of every 100 calories of heat produced within the body 80.1 per cent. is lost by radiation and conduction; 14.7 per cent. by evaporation; 2.6 per cent. in heating food and drink consumed, and 2.6 per cent. in heating inspired air.

Rest in bed till late in the day, a modified hibernation in fact, will clearly reduce our heat loss and output of energy, with consequent reduced food requirements. I therefore most strongly urge that non-workers—the idle poor, and rich, the huge population of infirm and insane persons, be encouraged, nay, be compelled, to remain in bed, warm and at rest, till noon daily.—I am, etc.,

Bournemouth, Jan. 21st. W. JOHNSON SMYTH, M.D.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS.

THE following subscriptions to the Fund have been received during the week ending Wednesday, January 23rd:

	£	s.	d.		£	s.	d.
Dr. R. J. Wilson	2	2	0	Sir Thomas Barlow ...	5	0	0
Dr. T. Berry	2	2	0	Dr. F. de Havilland Hall	2	2	0
Dr. John Dunlop	1	1	0	Mr. C. S. Ashton	1	1	0
Dr. G. H Dawes	5	0	0	Dr. A. Court	1	1	0
Dr. A. Bowe...	1	1	0	Dr. Vincent Tighe ...	2	2	0
Lieut.-Col. E. Le Cronier Lancaster, R.A.M.C. ...	2	2	0	Mr. A. Jefferis Turner ...	2	2	0
Dr. Edwin Jackson ...	2	2	0	Mr. E. Edwards	2	0	0
Dr. W. Adams Clark ...	1	1	0	Dr. R. L. Legate	2	0	0
Dr. F. D. Bennett	2	0	0	Prof. Robert Saundby, LL.D.	1	1	0
Dr. John Thomson ...	2	2	0	Mr. T. R. Cook (Ed. Cook and Co., Ltd.)	1	1	0
Dr. J. A. Smail	1	1	0	Dr. H. A. Latimer ...	1	1	0
Dr. W. Collier	5	5	0	Sir Henry Burdett, K.C.B., K.C.V.O. ...	5	5	0
Dr Chas. F. D. Hammond	0	10	6	Mr. G. M. Arrowsmith ...	3	0	0
Lochiel Sheep Farming Co., Ltd (per Meredith Townsend, Esq) ...	50	0	0	Dr. T. P. Greenwood ...	0	6	0
Mr Meredith Townsend..	1	1	0	"Anon."	2	2	0
Dr. J Hepworth Shaw ...	2	2	0	Dr. F. M. Blumer	1	1	0
Dr. C. O. Hawthorne ...	5	5	0	Mr. J. P. Ellerington ...	10	0	0
Per Sir R. J. Godlee ...	7	7	0	Mr. W. J. Shepperd ...	0	10	6

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

Universities and Colleges.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examinations indicated:

FINAL EXAMINATION.—*Surgery:* H. Miller. *Midwifery:* H. Miller, E. Suence. *Medical Jurisprudence:* J. J. van Niekerk, J. M. Speirs, L. L. Steele, W. B. Watson, B. Chiefitz, V. A. Rankin, A. Galustian, J. C. Meek, J. K. Steel, S. A. Faulkner.

The following candidates having passed the Final Examination have received the diplomas of L.R.C.P.E., L.R.C.S.E., L.R.F.P. and S.G.:

W. O'G. Donohue, C. R. C. Moon, Arukatti Patabendigo Frederick Abeysuriya.

Obituary.

HAROLD FREDERIC MOLE, F.R.C.S.,

SURGEON TO THE BRISTOL ROYAL INFIRMARY.

MR. HAROLD F. MOLE, F.R.C.S., died at his residence, 24, College Road, Clifton, on December 21st, 1917, from heart failure following asthma, to which he had been subject since childhood. For many years his brilliant professional career had been seriously handicapped by ill health, but he never allowed this to interfere with the excellence of any work he undertook.

After studying at the Bristol Medical School and Royal Infirmary, where he was awarded the Tibbits Memorial Prize for practical surgery, he took the diplomas of L.R.C.P., M.R.C.S. in 1890, and that of F.R.C.S. in 1892. In 1891, after holding junior appointments at the Royal Infirmary, he became curator of the museum, the post being created by the staff in order to retain him as a colleague. From 1895 to 1902 he was in turn house-physician, house-surgeon, and senior resident officer, in which capacities he proved himself an astute clinician and a tactful administrator, and became very popular with the students as a clinical teacher. In 1902 he was elected assistant surgeon, with charge of the aural clinic. His knowledge of otology soon became very thorough, and he did extremely good work in the production of a series of models of the labyrinth with fusible metal. He joined the Otological Society in 1903, and remained a member of the section after the amalgamation with the Royal Society of Medicine, and later he was made member of the council.

Considering his state of health, the amount of energy he displayed was wonderful, and he found time to act as secretary to the Bristol Medico-Chirurgical Society from 1903 to 1907, to the journal of which society he made several contributions. In 1909 he became full surgeon to the infirmary and clinical teacher in surgery to the university, and continued as such until 1916, when ill health compelled him to relinquish these posts.

None who came in contact with him could fail to be attracted by his personality. Punctual in habit and precise in action, he combined a cultured mind and a keen sense of humour with a rare appreciation of his responsibilities, which rendered him a charming companion and an exceptionally valuable member of the profession.

It was a bitter disappointment to him that in 1914, owing to illness, he had to resign his commission in the R.A.M.C.(T.F.), after serving for two months. He married in 1913, and leaves a widow and two sons.

A. L. F.

DR. GEORGE KILPATRICK GIVEN died at his residence at Muswell Rise on January 6th, aged 71. He received his medical education at the Ledwich School, Dublin, and Queen's College, Belfast, and took the diplomas of L.R.C.P. and S.Edin. in 1869 and the L.M.Dub. He practised for many years at Gortin, co. Tyrone, where he was physician to the Infirmary and Fever Hospital, M.O.H. to the Gortin Dispensary District, and consulting M.O.H. to the Gortin Union. He was also a magistrate for county Tyrone. He had been in failing health since the loss in March, 1915, of his youngest son, who was on board the ss. *Falabar* when she was torpedoed. He leaves a widow, one son, who holds an appointment as staff surgeon in the Royal Navy, and one daughter.

DR. HERBERT WHITLEY SKEY WILLIAMS, of P is-yn-dre, Holywell, died in London on December 15th last, to the deep regret of a large circle of friends and patients. Born on June 29th, 1869, the elder son of the late Dr. James Williams of Holywell, he was educated privately. He studied medicine at University College Hospital, London, and took the diplomas of M.R.C.S. and L.R.C.P. in 1892. He was at different times ambulance surgeon at the Northern Hospital and house-surgeon at the Royal Infirmary, Liverpool, and later joined his father at Holywell, gradually succeeding to the entire practice. In September last, owing to the breakdown in his health, he was compelled to leave home. He was medical officer of health for the Holywell Urban District, district medical officer under the Holywell Rural District Council, public vaccinator, one of the medical officers of the Flintshire Dispensary and Cottage Hospital, certifying factory surgeon for Holywell District, and held other public professional appointments. He was Justice of the Peace for Flintshire and was also a member of the military tribunal for the Holywell area. More than one of the above appointments had been held by his father and grandfather before him, the records of the family practice being traceable back for one hundred years. Dr. Herbert Williams was also in former days an enthusiastic member of the local volunteer company attached to the Royal Welsh Fusiliers, while during the war he was largely instrumental, as captain, in forming and maintaining the present local company of volunteers. He was greatly liked and esteemed throughout the district and by many friends elsewhere. He married in 1910 the daughter of General Inglis of Ryde, who, with two little children, survives him.

DR. JAMES COLLINGS HOYLE died on January 8th at Upham, Hants, aged 50. After studying medicine at St. Bartholomew's Hospital he took the diplomas of M.R.C.S., L.R.C.P. in 1889, and graduated M.B., B.S. of the University of Durham in 1894 and M.D. in 1913. He obtained the D.P.H. in 1892 and held for some years the post of M.O.H. for Gray's Inn. In 1896 he was appointed health medical officer for Rangoon and secretary to the Plague Council for Burma, but after four years was compelled by ill health to resign these posts, to the great regret of all who knew him. During the next year or two he made voyages in search of health, and then settled in practice at Upham in 1892. He was appointed assistant county medical officer of health to the Hampshire County Council in 1911, and later was given charge of two tuberculosis dispensaries. Unfortunately his health again broke down in 1915. For a year or so he acted as medical officer to the Royal National Sanatorium, Bournemouth, but last year he had to give up work entirely. Dr. Hoyle was a man of much zeal and ability, with a very marked capacity for inspiring affection and confidence in all with whom he came in touch.

Medical News.

THE appointment of Frank Cole Madden, M.D.Melb., F.R.C.S.Eng., Professor of Surgery, Egyptian Government School of Medicine, and Senior Surgeon to Kasr-el-Ainy Hospital, Cairo, as Honorary Medical Adviser to His Excellency Sir Reginald Wingate, G.C.B., High Commissioner for Egypt, has been approved by His Majesty's Principal Secretary of State for Foreign Affairs.

THE Research Defence Society and the Association for the Advancement of Medicine by Research have been united into one society, which will retain the name and official address of the Research Defence Society. All such communications as used to be made to the Association for the Advancement of Medicine by Research should now be made to the Research Defence Society, at 21, Ladbroke Square, W.11.

THE first of a course of nine public lectures, on animal life and human progress, at King's College, London, will be given by Professor Dendy on Wednesday next, at 5.30 p.m. The lectures will be continued weekly on Wednesdays at the same hour. The lecture on March 6th, when Sir Patrick Manson will be in the chair, will be given by Dr. R. T. Leiper, Reader in Helminthology at the University of London, on "Some inhabitants of man and their migrations."

MR. EDMUND GOSSE, chairman of the London Library, informs us that that institution has arranged to act as a collecting centre for books, to assist the Red Cross and Order of St. John. Those members of the public who do not use the Post Office scheme are invited to send literature to the Librarian, London Library, St. James's Square, London, S.W., where it will be sorted. Any valuable books will be sold to buy larger numbers, and the whole given to the Red Cross War Library for distribution to the sick and wounded men of the navy and army.

AT the January meeting of the Illuminating Engineering Society Mr. L. Gaster read a paper, in which he discussed the future prospects of illuminating engineering. One of the immediate tasks of the society should be, he said, to obtain statistics showing the prejudicial effects of inadequate and unscientific lighting on the health and eyesight of factory workers. The Health of Munition Workers Committee had produced some evidence that inadequate lighting was prejudicial to health, and might cause headaches and other effects of eyestrain, apart from the fact that it also led to industrial accidents. The society intends to make a detailed survey, in order to place the matter beyond all question.

A CORRESPONDENT who has recently been called up for a fourth medical examination writes to the *Cambridge Daily News* in praise of the new arrangements made by the Ministry of National Service. On the day that he attended the Cambridge office not more than twenty others were called up for examination. The rooms were well warmed and everything possible was done for the comfort of the men. The examination by the four doctors forming the medical board was thorough and individual, and the men were treated with every consideration. After passing through the hands of each member of the board the men were informed by the chairman of the grade in which they placed, and within a very few minutes their cards were handed to them, together with an order for a day's pay to be paid next door. The writer concludes that if everything is done elsewhere as it is done at Cambridge there will be little cause for complaint.

AT a meeting of the Medical Society of Magdeburg, Dr. A. Weinert reported several striking cases of sudden death among soldiers who only a few minutes or hours earlier had been on duty. In several cases of diphtheria in which the diphtherial membrane was spread over the pharynx, larynx, and the whole respiratory tract the patient had remained on duty till about two hours before death. One patient suffering from abscess of the larynx had been off duty only half an hour when he died. One rare cause of sudden death was due to haemorrhage into the suprarenals after a fall. In three cases there were fatal haemorrhages from gastric ulcers, while the patients were also suffering from pneumonia. In a recent paper by Beitzke eleven cases of sudden death among soldiers are recorded in which, at the necropsy, nothing serious enough to be fatal could be found apart from early nephritis; but this was slight.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

PAINLESS CHILDBIRTH.

DR. G. BLACKER (45, Wimpole Street, W.) writes: In view of the interest which the subject of "twilight sleep" is exciting at the present time I am anxious to obtain authentic details of any cases in which this method of narcosis has produced dangerous symptoms or a fatal result in either the mother or the child. If any of your readers can furnish me with the particulars of any such cases I shall be greatly obliged.

PAY OF ANAESTHETISTS IN MILITARY HOSPITALS.

ANAESTHETIST in military hospital wishes to know if any other medical officer holding a similar appointment has applied for the special pay of 2s. 6d. a day, and if so whether his application has been successful.

INCOME TAX.

"X" who before the war was in partnership, is now serving abroad and has let his house; he holds certain War Loan stock. The point is whether he is resident in this country.

*** The residential test would seem to be the same with regard to the exemption from tax on war loan as in the ordinary case of relief from earned income. The special provision contained in Sec. 71 (1) of the Finance (1909–10) Act 1910 provides that a person employed in the service of the Crown abroad shall be entitled to relief "as if he were resident in the United Kingdom," though in computing the total income for the purpose of determining the rate of relief the non-chargeable income would have to be included. We suggest, therefore, that on the facts stated "X" would have reasonable grounds for claiming (1) that his war loan interest is at present exempt from duty and (2) that he is entitled to relief in respect of the rate of tax chargeable on his partnership profits on the special ground that he is employed in the service of the Crown abroad.

ANSWERS.

FINGER CRACKS.

DR. C. J. B. JOHNSON (King's Heath) sends the following suggestion: Heat a piece of shoemaker's wax and fill the crack with it. One application is generally sufficient. The objection to it is the dirty appearance. As a preventive the hands should be thoroughly rubbed with vaseline or oil before washing.

"X" writes: I have had the best results from a solution of celluloid (old photographic film, well cleaned). Dissolve in ether and thin down with amyl acetate. The crack must be perfectly dry, and be kept on the stretch (gaping) till repeated coats of the solution have dried in and filled it up. The essential point to remember is that the object is not to bridge over the crack, and still less to draw its sides together, but to fill it up solidly from the bottom. If well done, it should last, in spite of free use of the finger, washing, etc., till the skin outgrows the crack. Only in extreme cases need a few fibres of cotton-wool be added. This solution adheres better than collodion.

ICHTHYOSIS writes: In my personal experience of this disability, which is considerable, the only treatment I have found really useful is that recommended to me a number of years ago by the late Dr. Allan Jamieson of Edinburgh. A thin wisp of cotton-wool is fixed over the crack (with a good grip of the adjacent nail) by means of "epicolloid," a collodion preparation made by Messrs. Duncan and

Flockhart of Edinburgh, and more adhesive and durable than any of the other similar preparations I have tried. It is neater and cleaner than plaster, can be washed and scrubbed repeatedly, and will often remain in place for two days or even longer. The cracks heal up rapidly beneath it and commencing ones can usually be aborted by its use.

LETTERS, NOTES, ETC.

MIRROR WRITING AND WRITING WITH THE LEFT HAND.

DR. WILLIAM ELDER (Leith) writes: In amplification of the letter and notes in the BRITISH MEDICAL JOURNAL of January 19th I wish to point out to those interested that they will find the subject of mirror writing discussed in my work on *Aphasia and the Cerebral Speech Mechanism* in 1897 and the article on mirror writing in *The Encyclopaedia Medica*, vol. viii, 1901. In these articles I offered what I believe to be the explanation of what Dr. Heywood Smith and you state as a curious fact that mirror writing can be at once identified as the person's handwriting as it reproduces the characteristics of the particular individual's right handwriting. It would require too much space to summarize the explanation here, but I believe that the movements that produce mirror writing are guided from the left cortex just as the movements of the right hand are guided in ordinary writing. Mirror writing results from bilateral representation of the movements of the hands, etc.

Every one, however, is not a true mirror writer, even although he may be able to write backwards with the left hand, as the statistics of experiments I published in those articles showed. Probably a greater number can be found amongst quick expert writers and individuals of special aptitude. It has also to be noted that the calling into action of the eyesight rather interferes with the production of mirror writing.

The suggestion of Sir James Barr is an excellent one, namely, to write with the left hand on paper backed with carbon paper so that the mirror writing can be read on the reverse side. For those poor fellows who have lost their right hand this is a means by which at once many of them could write letters with their left hand without going through the rather painful and patient process of learning to form the letters in the ordinary way, but it is to be remembered that probably practice of mirror writing with the left hand will rather retard the progress of the pupil who is learning to write in the usual way with the left hand.

COLD-CATCHING DANGERS.

DR. T. REUELL ATKINSON (Chadwell Heath) writes: A few days ago an article with the above heading, by a "Medical Correspondent," appeared in a daily newspaper. He stated that "bronchitis and pneumonia were among the most fatal of cold-catching diseases"—a slightly involved statement, but is it true? Do either of those diseases owe their origin to *cold?* One often reads that So-and-so caught a chill and pneumonia followed. But was not the chill the evidence of the onset of the pneumonia? For many years I have held the view that the simple bronchitis and bronchial catarrh so prevalent in our climate in winter were due to the usual shutting up of doors and windows and sitting in a stuffy and often smoke-laden room, theatre, cinema, church, or chapel—"gassed," in fact, in a mild form. Is not the cough of so-called bronchitis and bronchial catarrh more often laryngeal or pharyngeal? Acute bronchitis as a disease *per se* I seldom or never see. Does any one? In the JOURNAL for February 15th, 1913, I described the good results I had obtained in these winter cough cases by the use of an inhaler, made by Squire, on which a few drops of a solution of iodine, creosote, carbolic acid, and chloroform were placed, worn and kept on all night. One night's inhalation often cures. After repeated trials, I have as strong a faith now as then in its efficacy. The laity have a horror of cold and chills and draughts, which is kept alive by "medical opinions" so often given in newspapers. Hence stuffiness is rampant in people's homes, and, worst of all, in the little cottage rooms of the poor.

SKIN GRAFTING.

TEMPORARY CAPTAIN R.A.M.C. writes: None of the points of interest mentioned by Dr. H. C. Crew (January 19th, p. 84) are novel. In my student days at Guy's in the nineties I remember skin grafts of foreskins being used. They were washed in warm boric lotion, and kept in the lotion until required for use. As far as I can recollect it was often considerably longer than two hours from the time of the circumcision to the "planting" of the grafts. Success was not invariable with all the grafts, but the majority "took."

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

J. K. P., in the course of a letter continuing the discussion on this subject, expresses a strong opinion that the present ruling of the Army Council as to medical students who are at present in the army is grossly unfair to those students who do not come within the purview of the order. The present situation cannot, however, he thinks, be laid at the door of the War Office authorities, who only look at the military aspect, and care nothing about what the loss of study may entail to the student or his parents. The question first came up at the annual meeting of the British Medical Association in July, when a resolution was brought forward that all bona fide medical students should be released from military service and allowed to resume their studies. This resolution got short shrift. A member immediately proposed that the meeting should pass to the next business, and this was carried without a word of protest. Since then, although the subject has come up in various forms, neither the General Medical Council nor the British Medical Association, through the Central Medical War Committee, has shown much interest.

So long as the colleges and universities can retain sufficient students to "carry on," the future welfare of the medical student who is in the army does not seem to be any concern of theirs. The function of the Central Medical War Committee is to keep the army supplied with medical officers. So long as that duty is carried out to the satisfaction of the military authorities during the present emergency the future of the medical student or the profession after the war will not worry them very much.

Why should the medical student be put in a different category to the apprentice fitter? The former is necessary to keep up the supply of medical officers for the army, the latter the supply of skilled artisans for munition works; one class gets total exemption, the other, to put it at its best, a "make believe." The reason is, of course, that the trade union of the artisan sees that he is not interfered with, whilst the medical student has only the General Medical Council and the British Medical Association to protect his interests. The patriotism of the boys who left their studies before being compelled to do so has received treatment of which neither the profession nor those who are supposed to look after its interests can feel proud. The equitable and just solution is quite simple. Why should not all medical students be required to serve for one year, at the termination of which they should be compelled to resume their studies? Those joining up would balance those coming out, and a year's loss of study could be easily overtaken.

J. A. A., in the course of a letter on this subject, writes: It may be of interest to relate the story of three medical students, A., B., and C., who commenced their medical studies together in 1913. They passed their first professional examination in June, 1914, before the war broke out, and commenced their second year together in September, 1914.

Then came the great appeal to the patriotic instincts of young men. A. left his studies and enlisted at once. Within six months he was fighting in Gallipoli, later in Mesopotamia, and is still, after three years, risking his life daily in the service of his country.

B., held back maybe by the appeals of those whose wishes he was bound to respect, resisted the daily taunts of his professors until he had passed his second professional. Then, when conscription was looming large, he joined, but within a few months was able to take advantage of the A.C.I. of December, 1916, and return to his studies. He is now well on his way to becoming qualified.

C. neither heeded his country's call nor his professors' sneers, and risked the coming of conscription. His super-patriotism was rewarded by total exemption, and whilst A. was bleeding for his country on the plains of Mesopotamia, C. was gathering in the spoils of a unique experience as unqualified (salaried) house-surgeon in a large hospital attached to his university. He was enabled by special concessions to enter for his final examination six months earlier than usual, but remembering, at the last moment, that should he qualify he would be required to show his patriotism where shells were bursting, he decided to postpone his final as long as possible, until, I suppose, the end of the war approaches. It appears that a man need only become a fourth year student and he is safe for the duration of the war, provided he is wise enough not to qualify. He simply acts as unqualified house-surgeon, obtains all his experience (and salary), and runs no risk. But if a man comes home under A.C.I. 1751, he must, no matter how long he has been away from his books, pass his examination within six months or be recalled ignominiously to the ranks.

You, Sir, on page 90 of last week's issue, appear to make some sort of apology for this state of things. I am a loyal member of the British Medical Association, but I venture to think that if the officials of the British Medical Association had sons suffering under this outrageous injustice, such cold comments on such a burning question would not appear in the JOURNAL. Surely it is not beyond the wit of man to combine fair treatment to the patriots of 1914 with national expediency. Let those responsible (including the British Medical Association) see to it.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.